



**FIRST QUARTER 2006**  
**QUARTERLY GROUNDWATER MONITORING REPORT**

**Sampled on March 8, 2005**

**Job # SP-120**

**LOP # 12365**

**Big Oil & Tire – Big Foot Service Station (Big Foot Gas)**

2801 Central Avenue  
McKinleyville, California 95519

May 18, 2006

This *Quarterly Groundwater Monitoring Report* was prepared by SounPacific Environmental Services (SounPacific) for Big Oil & Tire Co. (BO&T), using data from previous studies conducted by Clearwater Group, Inc. (CGI) and a review of relevant files at Humboldt County Department of Health and Human Services: Division of Environmental Health (HCDEH). Big Foot Gas (the Site) is located at 2801 Central Avenue in McKinleyville, California (Figure 1).

**SITE DESCRIPTION**

The Site is surfaced around the current structure with concrete and asphalt. Site improvements include a single story building with an attached, overhead awning that covers the main dispenser islands. The main structure covers approximately 800 square feet and is positioned near the center of the property with the entrance to the building facing west towards Central Avenue. Attached to the main structure is a small out building at the north end of the property that is used for storage (Figure 2).

Two (2) 12,000-gallon split compartmented underground storage tanks (USTs) are located in a

single excavation between the station and Central Avenue and are used for the storage of three grades of unleaded gasoline and diesel fuel. Fuel is dispensed from two main dispenser islands, which are located under the awning. The Site is serviced by public utilities. Surface water is controlled by drainage ditches and storm drains (Figure 2).

## **SITE TOPOGRAPHY AND LAND USE**

SounPacific understands that the property is currently owned by BO&T of Arcata, California. The main structure is used as a retail gas station for the dispensing of three (3) grades of unleaded gasoline and diesel fuel from the USTs onsite. On the north section of the property, a commercial propane tank is stored and used for the filling of smaller propane tanks for the public (Figure 2). The surrounding land use is a mixture of commercial and residential. An automobile garage is located immediately to the south across Murray Road, and properties adjacent to the east, west and north are undeveloped.

The Site is approximately two (2) miles east of the Pacific Ocean and approximately 110 feet above mean sea level (amsl). The Site is situated approximately 600 feet south of Norton Creek and 1,400 feet north of Widow White Creek. According to the United States Geological Survey Arcata North Quadrangle California-Humboldt County, 7.5 minute series (Topographic) 1959 (photo-revised 1972), a tributary of Norton Creek is re-routed into an underground culvert along the south side of the Site. Norton Creek is also artificially controlled along the eastern side of Central Avenue near the Site. These two engineered drainage features intersect near the southwestern corner of the property and flow west, toward the Pacific Ocean (Figure 2). It is uncertain if the engineered drainage along the southern and western boundaries of the Site will exhibit any hydraulic influence on groundwater flow directly beneath the Site. Topography consists of rolling terrain that gently slopes west toward the Pacific Ocean (Figure 1).

## **ENVIRONMENTAL SITE HISTORY**

Previous studies from SounPacific and Clearwater Group, Inc. (CGI) indicated the following historical information:

### **1991 Installation of (2) 12,000-gallon Gasoline USTs**

On May 8, 1991, Beacom Construction of Fortuna, California (Beacom) installed two (2) 12,000-gallon USTs (Figure 2). Prior to installation, three (3) groundwater samples (TP-1, TP-2, and TP-3) were collected from the excavation (Figure 3). No constituents were reported above laboratory detection limits (Table 1). In June of 1991, six (6) soil samples (W-1, W-2, E-1, E-2, E-3, and S-1) (Figure 3) were collected from beneath the product lines. Elevated gasoline range hydrocarbons were reported at the highest concentrations in sample E-2, which was located to the southeast of the eastern dispenser islands (Table 2).

### **1991 Removal of Former Gasoline and Kerosene USTs**

On July 11, 1991, Beacom removed one (1) 2,000-gallon gasoline UST and one (1) 1,000-gallon kerosene UST from separate locations as indicated on Figure 3. Two (2) soil samples (Premium North and Premium South) were collected from the sidewalls of the gasoline UST removal excavation at a depth of 5.5 feet below ground surface (bgs) and one (1) groundwater sample (Premium) was collected from the bottom of the excavation pit. Beacom also collected two (2) soil samples (South #1 and South #3) beneath the product lines at a depth of 1'6" bgs (Figure 3). Elevated levels of TPHg and BTXE were reported in S-3, which was adjacent to the west of the station (Tables 1 and 2). Beacom also collected two (2) soil samples (Kerosene East and Kerosene West) at a depth of six feet bgs and one (1) groundwater sample (Kerosene) from the 1,000-gallon kerosene UST removal excavation (Figure 3). TPH as solvent (TPHs) was reported in the groundwater at elevated levels (Table 1).

### **1995 CGI Investigation**

On November 7, 1995, CGI staff conducted a preliminary site assessment at the Bigfoot Service

Station in an effort to initially evaluate the extent of soil contamination related to the former 2,000-gallon gasoline UST and the former 1,000-gallon kerosene UST. The investigation was performed in accordance with the Trans Tech Consultants' *Work Plan Preliminary Site Assessment*, dated June 12, 1993, and *Work Plan Addendum*, dated March 12, 1993. The investigation consisted of hand-augering two (2) soil borings near the former 2,000-gallon gasoline UST (SB-1 and SB-2) and two (2) soil borings near the former 1,000-gallon kerosene UST (SB-3 and SB-4) (Figure 3). Based on the results from this investigation, it was determined that secondary sources of contamination remained near the former 2,000-gallon gasoline UST and near sample South # 3 (near previous product lines) (Table 2). CGI recommended excavation of additional soils and the installation of monitoring wells.

## **2000 SounPacific Investigation**

In a letter dated January 14, 1998, HCDEH requested a Work Plan to investigate the extent of hydrocarbon contamination in groundwater related to releases of gasoline and kerosene from the previous USTs and product lines, and to perform interim remedial actions at the Site. On September 20, 2000, SounPacific staff performed a subsurface investigation at the Bigfoot Service Station in accordance with Phase 1 of the approved CGI *Revised Subsurface Investigation and Interim Remediation Workplan*, dated August 14, 1999, and the CGI *Workplan Addendum*, dated December 21, 1999. The purpose of the investigation was to further evaluate the extent of soil and groundwater onsite. Ten (10) soil borings (B-1 through B-10) (Figure 3) were installed with a hand-auger to depths ranging from 6.3 feet bgs to 9.5 feet bgs, with the exception of borings B-4 and B-5, in which cement was encountered just below the surface of the soil. Groundwater samples were collected from eight (8) boring locations (B-1 through B-3, and B-6 through B-10). Elevated levels of TPHg, BTXE, and MTBE were reported in borings B-7 and B-10, located between the station and USTs and east of the dispenser islands, respectively (Table 1). Soil samples were collected from nine (9) boring locations (B-1 through B-3 and B-5 through B-10). A soil sample from boring B-5 was also analyzed for TPHd due to empirical evidence observed in the field. Elevated levels of TPHg were reported in boring B-10 (Table 2). Since MTBE was detected in six (6) out of eight (8) groundwater samples, along with the presence of other gasoline constituent contaminants, SounPacific recommended that further investigation was

needed to define the extent of contamination, including the investigation of potential contaminant transport conduits, the installation of monitoring wells, and the initiation of a groundwater monitoring program.

## **2002 SounPacific Investigation**

In a letter dated March 1, 2001, HCDEH requested a Work Plan to determine the extent of contamination at the Site and to evaluate preferential transport pathways. On April 22, 2002, SounPacific staff performed a subsurface investigation which followed the scope of work in the approved *Subsurface Investigation Workplan*, dated April 10, 2001. The investigation consisted of installing seven (7) soil borings (B-11, B-13 through B-18) and six (6) two-inch monitoring wells (MW-1 through MW-6) (Figure 3). Soil and groundwater samples were collected from each boring location (Table 1-2).

The highest level of contamination was present in well MW-5, which is located adjacent to the previous 2,000-gallon gasoline UST. SounPacific identified three (3) discrete areas that appeared to have elevated groundwater contamination. SounPacific recommended that a work plan be developed to deal with these three areas of concern and that quarterly sampling and monthly water levels continue as approved.

## **2003 Site Assessment (SounPacific)**

On June 20, 2003, SounPacific submitted to HCDEH a *Fourth Quarterly Groundwater Monitoring / Site Assessment Report*. The purpose of the report was to discuss the groundwater-monitoring program that took place at the Site, present a site conceptual model that interpreted all previous investigative work at the Site, and provide recommendations for future activity. In this report, SounPacific stated that information gathered to date indicated that the soil plume had been delineated to the east, northeast, and southeast, but that further investigation is needed just to the north of the dispenser islands around borings B-16, B-17, and B-18; to the west of the UST tank farm; and to the south in the area of boring B-5. SounPacific recommended that a Work Plan be

prepared to delineate the soil plume in these areas. In addition, SounPacific recommended that the Work Plan include a series of borings near the product lines, which would be useful for determining whether the product line trenches were acting as preferential pathways.

### **2006 Site Assessment (SounPacific)**

*A Subsurface Investigation Workplan*, dated August 3, 2005, was approved by HCDEH in a letter dated August 22, 2005. In addition, SounPacific submitted a Work Plan addendum, entitled *Response to Workplan Approval Letter dated August 22, 2005*, which further clarified SounPacific's rational and intent for work proposed in the Work Plan. This addendum was approved in a letter from HCDEH date October 27, 2005.

On February 2, 3, and 9, 2006, SounPacific performed a subsurface investigation that consisting of drilling and sampling fifteen (15) onsite and offsite soil borings to further delineate the lateral and vertical extent of petroleum hydrocarbon contamination. Soil analytical results from the investigation did not identify any significant soil contamination, with TPHg less than 3.2 ppm, TPHd less than 90 ppm, and TPHmo at less than 51 ppm. Other constituents, such as methyl tertiary butyl ether (MTBE) were sporadically detected at concentrations below one (1) ppm. The highest concentrations were encountered at or above a depth of two (2) feet bgs in the fill under the asphalt paving. Analytical results for groundwater collected from boreholes reported TPHg at a maximum of 23,000 ppb, and its' BTXE constituents, near the south end of the building and near the dispenser islands. MTBE (maximum 3,300 ppb) was detected near the dispenser islands. TPHd (maximum 520 ppb) was also detected sporadically throughout the Site. TPHmo is detected (maximum 20,000 ppb) randomly throughout the Site. Groundwater contamination was identified in borings on the west side of Central Avenue.

In summary, the investigation determined that the extent of any residual impacted soil at the Site is extremely limited and requires no further action. Groundwater contaminant concentrations on the Site are high and will require remedial action; however, although groundwater contamination was identified on the west side of Central Avenue, concentrations in the groundwater beneath Central Avenue are unknown.

## **RESULTS OF QUARTERLY SAMPLING**

A quarterly groundwater monitoring program was implemented in May 2002, following the installation of the monitoring wells at the Site, and will continue until further notice. The program consists of recording quarterly water level data and collecting quarterly groundwater samples for laboratory analysis. Water level data is used to develop a figure which displays the groundwater gradient and average flow direction using standard three-point calculations. Analytical results of monitoring well groundwater samples collected during quarterly sampling events present hydrocarbon contamination levels in the groundwater beneath the Site. This report documents the results from the monitoring wells that were gauged and sampled on March 8, 2005.

### **FIELD DATA**

<b>Wells Gauged:</b>	MW-1, 2, 3, 4, 5, and 6
<b>Groundwater:</b>	Depth ranged from 0.59 feet to 2.15 feet btc Table 3) Elevation ranged from 110.58 to 112.03 feet amsl (Table 3)
<b>Floating Product:</b>	Sheen detected in MW-4 and MW-6
<b>GW Flow Direction:</b>	West (Figure 4)
<b>GW Gradient:</b>	0.01 feet per foot (ft/ft) (Figure 4)

On March 8, 2006, the depth to groundwater in the Site's six monitoring wells ranged from 0.59 feet below top of casing (btc) in well MW-5 to 2.15 feet btc in MW-2. When corrected to mean sea level, water level elevations ranged from 110.58 feet amsl in MW-3 to 112.03 feet amsl in well MW-5. Groundwater levels for the March 8, 2006, monitoring event, along with historical levels and elevations are included in Table 3. Groundwater flow on March 8, 2006, was towards the west at a gradient of 0.01 feet per foot. The groundwater flow and gradient are graphically depicted in Figure 4. Prior to sampling, all wells were purged; the groundwater field parameters for each well are presented below.

**MONITORING WELL MW-1 GROUNDWATER FIELD PARAMETERS**

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm) <sup>-1</sup>
12:07 pm	0	6.69	54.52	0.154
12:21	1.77	6.75	55.81	0.146
12:28	3.54	6.76	55.41	0.143
12:35	5.31	6.78	55.67	0.137

**MONITORING WELL MW-2 GROUNDWATER FIELD PARAMETERS**

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm) <sup>-1</sup>
11:08 am	0	6.26	55.41	0.436
11:15	1.12	6.37	55.53	0.421
11:20	2.24	6.40	55.72	0.414
11:24	3.36	6.43	55.69	0.420

**MONITORING WELL MW-3 GROUNDWATER FIELD PARAMETERS**

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm) <sup>-1</sup>
12:47 pm	0	6.37	56.01	0.237
12:56	1.62	6.40	56.03	0.232
1:03	3.24	6.44	56.91	0.236
1:09	4.86	6.54	57.22	0.223



**MONITORING WELL MW-4 GROUNDWATER FIELD PARAMETERS**

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm) <sup>-1</sup>
11:38 am	0	6.61	57.45	0.272
11:46	1.76	6.65	57.49	0.271
11:51	3.52	6.67	57.48	0.272
11:56	5.28	6.68	57.39	0.269

**MONITORING WELL MW-5 GROUNDWATER FIELD PARAMETERS**

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm) <sup>-1</sup>
1:51 pm	0	6.55	51.77	0.151
2:00	1.74	6.55	51.25	0.156
2:07	3.48	6.57	51.42	0.188
2:16	5.22	6.60	51.46	0.197

**MONITORING WELL MW-6 GROUNDWATER FIELD PARAMETERS**

Time	Total Vol. Removed/ gal	pH	Temp./ F	Cond./ ms(cm) <sup>-1</sup>
1:19 pm	0	6.58	55.59	0.170
1:27	1.48	6.57	56.53	0.171
1:31	2.96	6.63	57.25	0.175
1:38	4.44	6.68	57.48	0.170

### **ANALYTICAL RESULTS**

**Sampling locations:** MW-1, 2, 3, 4, 5, and 6

**Analyses performed:** TPHg, BTXE, MTBE, DIPE, TAME, ETBE, TBA, TPHd, and TPHmo

**Laboratory Used:** Basic Labs, Redding, California (ELAP #1677)

The analytical results for the current monitoring event are presented below and graphically depicted in Figure 5. The laboratory report is included as Appendix A. The historical analytical results for all monitoring wells, since the implementation of groundwater monitoring are included as Table 4.

	MW-1 (ppb)	MW-2 (ppb)	MW-3 (ppb)	MW-4 (ppb)	MW-5 (ppb)	MW-6 (ppb)
TPHg:	ND < 50	<b>336</b>	<b>54.8</b>	<b>5,150</b>	<b>11,700</b>	ND < 50
Benzene:	ND < 0.5	ND < 1.0	ND < 0.5	<b>45.4</b>	<b>3.8</b>	ND < 0.5
Toluene:	ND < 0.5	ND < 1.0	ND < 0.5	<b>98.5</b>	<b>107</b>	ND < 0.5
Xylenes:	ND < 1.0	ND < 2.0	ND < 1.0	<b>607</b>	<b>3,800</b>	ND < 1.0
Ethylbenzene :	ND < 0.5	ND < 1.0	ND < 0.5	<b>229</b>	<b>330</b>	ND < 0.5
MTBE:	ND < 1.0	<b>308</b>	<b>50.5</b>	<b>4</b>	ND < 2.0	ND < 1.0
DIPE:	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 1.0	ND < 0.5
TAME:	ND < 0.5	<b>155</b>	<b>14</b>	ND < 1.0	ND < 1.0	ND < 0.5
ETBE:	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 1.0	ND < 0.5
TBA:	ND < 50	ND < 100	ND < 50.0	ND < 100	ND < 100	ND < 50.0
TPHd:	ND < 50	<b>138</b>	<b>55</b>	<b>610</b>	<b>987</b>	ND < 50
TPHmo:	ND < 50	<b>144</b>	ND < 50	<b>147</b>	<b>165</b>	ND < 50

## **COMMENTS AND RECOMMENDATIONS**

On March 8, 2006, a groundwater monitoring event for the six (6) groundwater monitoring wells at the Big Foot Gas Station at 2801 Central Avenue in McKinleyville, California, was conducted. A summary of the results are presented below.

- The depth to groundwater in the six (6) wells ranged between 0.59 and 2.15 feet btoc. Groundwater flow was towards the west at a gradient of 0.01 feet per foot.
- Groundwater samples from the six (6) wells were collected and analyzed for TPHg, BTXE, five-fuel oxygenates, TPHd, and TPHmo. Laboratory results reported TPHg in four wells at concentrations ranging from 54.8 ppb (MW-3) to 11,700 ppb (MW-5). BTXE was reported in wells MW-4 and MW-5, with benzene at concentrations of 3.8 ppb (MW-5) and 45.4 ppb (MW-4), toluene at concentrations of 98.5 ppb (MW-4) and 107 ppb (MW-5), xylenes at concentrations of 607 ppb (MW-4) and 3,800 ppb (MW-5), and ethylbenzene at concentrations of 229 ppb (MW-4) and 330 ppb (MW-5). Of the fuel oxygenates, MTBE was reported in three wells at concentrations ranging from 4.0 ppb (MW-4) and 308 ppb (MW-2); TAME was reported in two wells at concentrations of 14.0 ppb (MW-3) and 155 ppb (MW-2); ETBE, DIPE, and TBA were not reported in any wells. TPHd was reported in four wells at concentrations ranging from 55 ppb (MW-3) to 987 ppb (MW-5). TPHmo was reported in three wells at concentrations ranging from 144 ppb (MW-2) to 165 ppb (MW-5).

Based upon these results the following observations and conclusions have been made.

- TPHg has been absent in monitoring well MW-1, since the 4<sup>th</sup> Quarter 2002 sampling event. TPHg has been consistently detected in well MW-2 at high concentrations, except for the 3<sup>rd</sup> Quarter 2003, in which the detection limits were raised to 5,000 ppb. Concentrations of TPHg have been detected in well MW-3 during thirteen out of sixteen sampling events. The highest concentrations of TPHg have been consistently detected in

wells MW-4 and MW-5 since the inception of the monitoring program. Concentrations of TPHg have been detected in well MW-6 during ten out of sixteen sampling events. See Figures 6 through 11.

- No BTXE compounds have been reported in MW-1 since the Well Installation sampling event. BTXE has been reported in wells MW-2, MW-3 and MW-6 during various sampling events at fluctuating concentrations. BTXE has been reported in wells MW-4 and MW-5 at high levels during the majority of the sampling events to date at fluctuating concentrations. See Figures 6 through 11.
- MTBE has been reported in well MW-1 during eleven out of sixteen sampling events at fluctuating concentrations and in wells MW-2 and MW-3 during every sampling event to date. Concentrations fluctuate in the range of  $10^3$  ppb in MW-2 and from  $10^2$  to  $10^3$  ppb in MW-3. MTBE has been reported in well MW-4 during eleven out of sixteen sampling events. MTBE has not been reported in MW-5 since the 4<sup>th</sup> Quarter 2002 sampling event, although the elevated reporting limit may be masking its presence. MTBE has been reported in well MW-6 during fourteen out of sixteen sampling events at fluctuating concentrations. See Figures 6 through 11.
- DIPE has not been reported in any wells since the inception of the monitoring program.
- TAME has been reported in MW-1 during multiple sampling events at low concentrations. TAME has consistently been reported in wells MW-2 and MW-3, since the inception of the monitoring, although concentrations in these wells have significantly fluctuated. TAME was reported five (5) times in MW-4 and one time in MW-5. In MW-6, TAME has been detected during multiple sampling events, with an overall decrease in concentrations.
- ETBE has only been reported five times in well MW-2, at low concentrations, since the inception of the monitoring program.

- TBA has occasionally been reported in wells MW-2, MW-3, and MW-6, but has not been reported in MW-1, MW-4, or MW-5.
- With the exception of the 3<sup>rd</sup> Quarter 2004 monitoring event, TPHd has not been reported in MW-1. TPHd was reported in MW-2 consistently during the last eleven sampling events. TPHd was reported in MW-3 during eight out of sixteen sampling events. TPHd has frequently been reported in wells MW-4 and MW-5, with concentrations varying from  $10^2$  to  $10^3$  ppb since the inception of groundwater monitoring. TPHd has been reported in well MW-6 during eight out of sixteen sampling events. See Figures 6 through 11.
- TPHmo has not been reported in well MW-1 since the inception of the monitoring program. TPHmo was reported five times in wells MW-2, MW-3, and MW-4 during the last five quarters. TPHmo has been reported six times in well MW-5 and five times in well MW-6 since the inception of the monitoring; four of those times were during the last four quarterly events. The lower reporting limit used currently, may portray the TPHmo trend more accurately in upcoming monitoring events.
- Lead scavengers as EDC was reported at low concentrations ( $< 2$  ppb) during multiple events in MW-3. EDC was also reported in MW-6 during the 2<sup>nd</sup> Quarter 2003. EDC and EDB were not been reported in any other well since the inception of monitoring. Analysis for EDC and EDB ceased in November 2004

Based on the results of the March 2006 monitoring event and historical results, the following future activities are proposed.

- Groundwater monitoring will be continued until further notice. Groundwater level measurements will be collected from the six (6) onsite monitoring wells to determine groundwater flow direction and gradient. Collected groundwater samples will be analyzed for TPHg, BTXE, five-fuel oxygenates, TPHd, and TPHmo.

- SounPacific has recently submitted a *Report of Findings* for the work performed in February 2006. The report also included a Corrective Action Plan to address the groundwater contamination at the Site. SounPacific will make further recommendations once the report has been evaluated by the HCDEH.

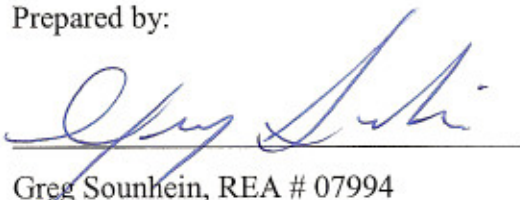
## CERTIFICATION

This report was prepared under the direct supervision of a California registered geologist at SounPacific. All information provided in this report including statements, conclusions and recommendations are based solely upon field observations and analyses performed by a state-certified laboratory. SounPacific is not responsible for laboratory errors.

SounPacific promises to perform all its work in a manner that is currently used by members in similar professions working in the same geographic area. SounPacific will do whatever is reasonable to ensure that data collection is accurate. Please note however, that rain, buried utilities, and other factors can influence groundwater depths, directions and other factors beyond what SounPacific could reasonably determine.

### **SounPacific**

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## **ATTACHMENTS**

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### **APPENDICES**

Appendix A:	Laboratory Report and Chain-of-Custody Form
Appendix B:	Standard Operating Procedures
Appendix C:	Field Notes



## **Tables & Chart**

**Table 1**  
**Groundwater Analytical Results**  
 Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Sample ID	Sample Location	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)	TPHs (ppb)	Methanol (ppb)	Ethanol (ppb)	Dissolved Pb (ppb)
Test Pit #1	TP-1	5/8/1991	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Test Pit #2	TP-2	5/8/1991	ND < 50	----	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	----	----	----	----	----	----	----	----	----	----
Test Pit #3	TP-3	5/8/1991	----	----	----	----	----	----	----	----	----	----	----	----	ND < 50	----	----	----
Premium	Premium	7/11/1991	<b>320,000</b>	----	<b>54,000</b>	<b>4,800</b>	<b>19,000</b>	----	----	----	----	----	----	----	----	----	----	----
Kerosene	Kerosene	7/11/1991	----	----	----	----	----	----	----	----	----	----	----	----	<b>1,500</b>	----	----	----
SPBFB-1	B-1	9/20/2000	ND < 50	ND < 0.50	ND < 0.50	<b>2.8</b>	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	ND < 5.0	----	----	----	ND < 50	<b>22</b>	ND < 20
SPBFB-2	B-2	9/20/2000	ND < 50	ND < 0.50	ND < 0.50	<b>3.4</b>	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	ND < 5.0	----	----	----	ND < 50	<b>70</b>	ND < 20
SPBFB-3	B-3	9/20/2000	ND < 50	ND < 0.50	ND < 0.50	<b>1.2</b>	ND < 0.50	<b>0.54</b>	ND < 0.50	ND < 0.50	ND < 0.50	ND < 5.0	----	----	----	<b>82</b>	<b>110</b>	ND < 20
SPBFB-6	B-6	9/20/2000	ND < 50	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	<b>1.0</b>	ND < 0.50	ND < 0.50	ND < 0.50	ND < 5.0	----	----	----	ND < 50	ND < 50	ND < 20
SPBFB-7	B-7	9/20/2000	<b>6,400</b>	<b>660</b>	<b>110</b>	<b>440</b>	<b>380</b>	<b>260</b>	ND < 2.0	<b>4.0</b>	ND < 2.0	<b>67</b>	----	----	----	ND < 200	ND < 20	ND < 20
SPBFB-8	B-8	9/20/2000	<b>140</b>	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	<b>580</b>	ND < 0.50	<b>85</b>	ND < 0.50	ND < 5.0	----	----	----	ND < 50	ND < 5.0	ND < 20
SPBFB-9	B-9	9/20/2000	ND < 50	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50	<b>180</b>	ND < 0.50	<b>9.9</b>	ND < 0.50	<b>26</b>	----	----	----	ND < 50	<b>16</b>	ND < 20
SPBFB-10	B-10	9/20/2000	<b>990</b>	<b>210</b>	<b>3.8</b>	<b>3.2</b>	<b>13</b>	<b>380</b>	ND < 0.50	ND < 0.50	<b>5.4</b>	<b>7.6</b>	----	----	----	ND < 50	ND < 20	ND < 20
SBGW-11	B-11	4/22/2002	<b>27,300</b>	<b>656</b>	<b>5,440</b>	<b>6,280</b>	<b>715</b>	<b>1,610</b>	ND < 0.5	<b>255</b>	ND < 0.5	ND < 0.5	<b>1,250</b>	ND < 50	----	----	----	----
SBGW-13	B-13	4/22/2002	ND < 50	ND < 0.3	<b>0.5</b>	<b>1.1</b>	ND < 0.3	ND < 2.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 50	----	----	----	----
SBGW-14	B-14	4/22/2002	<b>165</b>	<b>104</b>	<b>0.6</b>	<b>1</b>	ND < 0.3	ND < 2.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 50	----	----	----	----
SBGW-15	B-15	4/22/2002	<b>263</b>	ND < 0.3	<b>5.3</b>	<b>24.5</b>	<b>1.8</b>	ND < 2.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 50	----	----	----	----
SBGW-16	B-16	4/22/2002	ND < 50	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	ND < 2.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 50	----	----	----	----
SBGW-17	B-17	4/22/2002	ND < 25,000	ND < 150	ND < 150	ND < 300	ND < 150	ND < 1,000	ND < 250	ND < 250	ND < 250	ND < 25,000	<b>298,000</b>	ND < 50	----	----	----	----
SBGW-18	B-18	4/22/2002	ND < 50	ND < 0.3	<b>1.0</b>	<b>2.6</b>	ND < 0.3	<b>2.1</b>	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 50	----	----	----	----

notes:

TPHg: Total petroleum hydrocarbons as gasoline.

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl Ether

TAME: Tertiary amyl methyl ether

ETBE: Ethyl tertiary butyl ether

TPHd: Total petroleum hydrocarbons as diesel

TPHmo: Total petroleum hydrocarbons as motor oil

TBA: Tertiary butanol

TPHs: Total petroleum hydrocarbons as solvent

ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.

ND: Not detected at or below the method detection limit as shown.

**Table 2**  
**Soil Analytical Results**  
Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Sample ID	Sample Location	Sample Date	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Xylenes (ppm)	Ethylbenzene (ppm)	MTBE (ppm)	DIPE (ppm)	TAME (ppm)	ETBE (ppm)	TBA (ppm)	TPHd (ppm)	TPHs (ppm)	Lead (ppm)
BF West #1	W-1	6/18/1991	3	ND < 0.005	0.0067	0.049	ND < 0.005	----	----	----	----	----	----	----	----
BF West #2	W-2	6/18/1991	1.6	ND < 0.005	0.0067	0.02	ND < 0.005	----	----	----	----	----	----	----	----
BF East #1	E-1	6/27/1991	130	0.16	0.93	ND < 2.0	ND < 2.0	----	----	----	----	----	----	----	----
BF East #2	E-2	6/27/1991	210	1.9	17	20	3.4	----	----	----	----	----	----	----	----
BF East #3	E-3	6/27/1991	8	0.12	0.15	22	0.057	----	----	----	----	----	----	----	----
BF South #1	S-1	6/27/1991	88	0.062	0.18	0.34	0.065	----	----	----	----	----	----	----	----
PN @ 5'6"	Premium North	7/11/1991	7	0.049	0.0800	0.210	0.074	----	----	----	----	----	----	----	----
PS @ 5'6"	Premium South	7/11/1991	350	ND < 0.50	2.6	12.00	1.5	----	----	----	----	----	----	----	----
S-1 @ 1'6"	South #1	7/11/1991	36	0.0099	0.075	0.15	0.026	----	----	----	----	----	----	----	----
S-3 @ 1'6"	South #3	7/11/1991	5,000	14	280	510	96	----	----	----	----	----	----	----	----
KE @ 6'	Kerosene East	7/11/1991	----	----	----	----	----	----	----	----	----	----	----	ND < 1.0	----
KW @ 6'	KeroseneWest	7/11/1991	----	----	----	----	----	----	----	----	----	----	----	ND < 1.0	----
B-1 @ 3.5'	B-1	3/22/1995	ND < 1	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----	----	----	----	----	ND < 5
B-1 @ 5.5'	B-1	3/22/1995	ND < 1	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----	----	----	----	----	ND < 5
SB-1A @ 1.5 '	SB-1	11/7/1995	4,200	ND < 1	49	370	27	----	----	----	----	----	----	----	----
SB-1B @ 3'	SB-1	11/7/1995	5,600	ND < 2	97	590	59	----	----	----	----	----	----	----	----
SB-1C @ 5.5'	SB-1	11/7/1995	2,200	0.91	55	240	24	----	----	----	----	----	----	----	----
SB-2A @ 3'	SB-2	11/7/1995	ND < 1	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----	----	----	----	----	----
SB-2B @ 7.5'	SB-2	11/7/1995	23	0.015	0.014	0.220	0.1200	----	----	----	----	----	----	----	----
SB-3A @ 2'	SB-3	11/7/1995	ND < 0.2	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----	----	----	ND < 1	ND < 1	----
SB-4A @ 2'	SB-4	11/7/1995	ND < 1	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	----	----	----	----	----	ND < 1	ND < 1	----
SPBFB-1 @ 5'	B-1	9/20/2000	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-1 @ 10'	B-1	9/20/2000	ND < 1.0	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-2 @ 5'	B-2	9/20/2000	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-2 @ 9'	B-2	9/20/2000	ND < 1.0	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-3 @ 5'	B-3	9/20/2000	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-3 @ 10'	B-3	9/20/2000	ND < 1.0	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-5 @ 6"	B-5	9/20/2000	22	ND < 0.0050	0.0096	0.077	0.0090	ND < 0.050	----	----	----	----	2,900	----	----
SPBFB-6 @ 5'	B-6	9/20/2000	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-6 @ 7'	B-6	9/20/2000	ND < 1.0	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-7 @ 5'	B-7	9/20/2000	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-7 @ 7.4'	B-7	9/20/2000	ND < 1.0	0.0061	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-8 @ 5'	B-8	9/20/2000	ND < 1.0	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	0.15	----	----	----	----	----	----	----

**Table 2 (cont.)**  
**Soil Analytical Results**  
Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Sample ID	Sample Location	Sample Date	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Xylenes (ppm)	Ethylbenzene (ppm)	MTBE (ppm)	DIPE (ppm)	TAME (ppm)	ETBE (ppm)	TBA (ppm)	TPHd (ppm)	TPHs (ppm)	Lead (ppm)
SPBFB-8 @ 7.5'	B-8	9/20/2000	ND < 1.0	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-9 @ 10'	B-9	9/20/2000	ND < 1.0	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SPBFB-10 @ 5'	B-10	9/20/2000	<b>1.1</b>	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-10 @ 6"	B-10	9/20/2000	<b>1,400</b>	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.0050	ND < 0.050	----	----	----	----	----	----	----
SPBFB-10 @ 9'	B-10	9/20/2000	ND < 1.0	<b>0.014</b>	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.050	----	----	----	----	----	----	----
SB-11 @ 4'	B-11	4/22/2002	<b>2.342</b>	<b>0.068</b>	<b>0.447</b>	<b>0.995</b>	<b>0.116</b>	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-13 @ 4'	B-13	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-13 @ 8'	B-13	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-13 @ 12'	B-13	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-14 @ 4'	B-14	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-14 @ 8'	B-14	4/22/2002	<b>1.99</b>	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-14 @ 12'	B-14	4/22/2002	<b>0.625</b>	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-15 @ 4'	B-15	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-15 @ 8'	B-15	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-15 @ 12'	B-15	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-16 @ 4'	B-16	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-16 @ 8'	B-16	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-16 @ 12'	B-16	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-17 @ 4'	B-17	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	<b>0.023</b>	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-17 @ 8'	B-17	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	<b>0.007</b>	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-17 @ 12'	B-17	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-18 @ 4'	B-18	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-18 @ 8'	B-18	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----
SB-18 @ 12'	B-18	4/22/2002	ND < 0.060	ND < 0.005	ND < 0.005	ND < 0.015	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 0.005	ND < 5	----	----	----

Notes:

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tertiary butyl ether

TAME: Tertiary amyl methyl ether

DIPE: Diisopropyl ether

TPHs: Total petroleum hydrocarbons as solvent

ETBE: Ethyl tertiary butyl ether

TBA: Tertiary butanol

ppm: parts per million =  $\mu\text{g/g} = \text{mg/kg} = 1000\mu\text{g/kg}$ .

ND: Not detected at or below the method detection limit as shown.

**Table 3**  
**Water Levels**  
 Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-1	5/1/2002	11.66	111.57	1.54	110.03
	5/30/2002	11.67	111.57	2.43	109.14
	7/3/2002	11.63	111.57	2.65	108.92
	8/3/2002	11.62	111.57	3.40	108.17
	9/4/2002	11.64	111.57	3.90	107.67
	10/4/2002	11.70	111.57	4.25	107.32
	11/4/2002	11.65	111.57	4.36	107.21
	12/2/2002	12.63	111.57	3.61	107.96
	1/6/2003	11.66	111.57	1.22	110.35
	2/5/2003	11.67	111.57	1.31	110.26
	3/7/2003	11.67	111.57	1.67	109.90
	4/8/2003	11.67	111.57	1.00	110.57
	5/12/2003	11.67	111.57	1.32	110.25
	8/2/2003	11.88	111.57	3.11	108.46
	11/8/2003	11.88	111.57	2.57	109.00
	2/5/2004	11.88	111.57	1.21	110.36
	5/4/2004	11.88	111.57	2.03	109.54
	8/9/2004	11.82	111.57	3.71	107.86
	11/5/2004	11.83	111.57	2.08	109.49
	2/6/2005	11.83	111.57	1.65	109.92
	5/13/2005	11.81	111.57	1.32	110.25
	8/9/2005	11.90	111.57	2.90	108.67
	11/9/2005	11.81	111.57	1.20	110.37
	3/8/2006	11.88	111.57	0.83	110.74
MW-2	5/1/2002	12.00	113.03	2.75	110.28
	5/30/2002	11.85	113.03	3.63	109.40
	7/3/2002	11.87	113.03	4.20	108.83
	8/3/2002	11.87	113.03	4.68	108.35
	9/4/2002	11.87	113.03	5.22	107.81
	10/4/2002	9.71	113.03	5.64	107.39
	11/4/2002	11.82	113.03	5.67	107.36
	12/2/2002	11.83	113.03	4.83	108.20
	1/6/2003	11.86	113.03	2.46	110.57
	2/5/2003	10.22	113.03	2.52	110.51
	3/7/2003	11.72	113.03	2.71	110.32
	4/8/2003	11.72	113.03	2.22	110.81
	5/12/2003	11.72	113.03	2.53	110.50
	8/2/2003	11.98	113.03	4.31	108.72
	11/8/2003	11.98	113.03	3.95	109.08
	2/5/2004	11.98	113.03	2.44	110.59
	5/4/2004	11.98	113.03	3.24	109.79
	8/9/2004	11.97	113.03	5.07	107.96
	11/5/2004	12.04	113.03	3.26	109.77
	2/6/2005	12.04	113.03	2.79	110.24
	5/13/2005	9.12	113.03	2.57	110.46
	8/9/2005	9.14	113.03	4.16	108.87
	11/9/2005	11.97	113.03	2.57	110.46
	3/8/2006	9.13	113.03	2.15	110.88

**Table 3 (cont.)**  
**Water Levels**  
 Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, Californian 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-3	5/1/2002	11.39	112.13	2.15	109.98
	5/30/2002	11.24	112.13	2.94	109.19
	7/3/2002	11.25	112.13	3.41	108.72
	8/3/2002	11.24	112.13	3.84	108.29
	9/4/2002	11.21	112.13	4.32	107.81
	10/4/2002	11.22	112.13	4.69	107.44
	11/4/2002	11.22	112.13	4.83	107.30
	12/2/2002	11.23	112.13	4.02	108.11
	1/6/2003	11.25	112.13	1.91	110.22
	2/5/2003	11.25	112.13	2.00	110.13
	3/7/2003	11.29	112.13	2.30	109.83
	4/8/2003	11.29	112.13	1.69	110.44
	5/12/2003	11.29	112.13	1.99	110.14
	8/2/2003	11.46	112.13	3.57	108.56
	11/8/2003	11.46	112.13	3.00	109.13
	2/5/2004	11.46	112.13	1.91	110.22
	5/4/2004	11.46	112.13	2.61	109.52
	8/9/2004	11.46	112.13	4.14	107.99
	11/5/2004	11.40	112.13	2.67	109.46
	2/6/2005	11.40	112.13	2.30	109.83
	5/13/2005	11.42	112.13	1.98	110.15
	8/9/2005	11.50	112.13	3.40	108.73
	11/9/2005	11.40	112.13	1.95	110.18
	3/8/2006	11.67	112.13	1.55	110.58
MW-4	5/1/2002	11.34	112.76	2.44	110.32
	5/30/2002	11.14	112.76	3.28	109.48
	7/3/2002	11.11	112.76	3.84	108.92
	8/3/2002	11.14	112.76	4.32	108.44
	9/4/2002	11.12	112.76	4.86	107.90
	10/4/2002	11.12	112.76	5.24	107.52
	11/4/2002	11.05	112.76	5.36	107.40
	12/2/2002	11.08	112.76	4.51	108.25
	1/6/2003	11.05	112.76	2.04	110.72
	2/5/2003	11.06	112.76	2.17	110.59
	3/7/2003	11.24	112.76	2.51	110.25
	4/8/2003	11.24	112.76	1.69	111.07
	5/12/2003	11.24	112.76	3.14	109.62
	8/2/2003	11.32	112.76	4.03	108.73
	11/8/2003	11.32	112.76	3.31	109.45
	2/5/2004	11.32	112.76	2.03	110.73
	5/4/2004	11.32	112.76	2.85	109.91
	8/9/2004	11.32	112.76	4.64	108.12
	11/5/2004	11.20	112.76	2.87	109.89
	2/6/2005	11.27	112.76	2.51	110.25
	5/13/2005	11.24	112.76	2.14	110.62
	8/9/2005	11.49	112.76	3.77	108.99
	11/9/2005	11.23	112.76	2.00	110.76
	3/8/2006	12.61	112.76	1.59	111.17

**Table 3 (cont.)****Water Levels**

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-5	5/1/2002	11.10	112.62	1.43	111.19
	5/30/2002	11.11	112.62	2.71	109.91
	7/3/2002	11.12	112.62	3.31	109.31
	8/3/2002	11.14	112.62	3.85	108.77
	9/4/2002	11.12	112.62	4.37	108.25
	10/4/2002	11.15	112.62	4.85	107.77
	11/4/2002	11.15	112.62	4.97	107.65
	12/2/2002	11.13	112.62	4.02	108.60
	1/6/2003	11.15	112.62	1.11	111.51
	2/5/2003	11.18	112.62	1.23	111.39
	3/7/2003	11.15	112.62	1.70	110.92
	4/8/2003	11.15	112.62	0.95	111.67
	5/12/2003	11.15	112.62	1.33	111.29
	8/2/2003	11.36	112.62	3.53	109.09
	11/8/2003	11.36	112.62	2.67	109.95
	2/5/2004	11.36	112.62	1.10	111.52
	5/4/2004	11.36	112.62	2.18	110.44
	8/9/2004	11.35	112.62	4.17	108.45
	11/5/2004	11.34	112.62	2.19	110.43
	2/6/2005	11.32	112.62	1.62	111.00
	5/13/2005	11.30	112.62	1.24	111.38
	8/9/2005	11.20	112.62	3.20	109.42
	11/9/2005	11.30	112.62	0.92	111.70
	3/8/2006	11.47	112.62	0.59	112.03
MW-6	5/1/2002	10.92	112.38	2.31	110.07
	5/30/2002	10.91	112.38	3.13	109.25
	7/3/2002	10.91	112.38	3.64	108.74
	8/3/2002	10.92	112.38	4.09	108.29
	9/4/2002	10.93	112.38	4.61	107.77
	10/4/2002	10.96	112.38	4.99	107.39
	11/4/2002	10.92	112.38	5.05	107.33
	12/2/2002	10.93	112.38	4.27	108.11
	1/6/2003	10.93	112.38	2.05	110.33
	2/5/2003	10.95	112.38	2.14	110.24
	3/7/2003	10.95	112.38	2.46	109.92
	4/8/2003	10.95	112.38	1.82	110.56
	5/12/2003	10.95	112.38	3.12	109.26
	8/2/2003	11.13	112.38	3.81	108.57
	11/8/2003	11.13	112.38	3.03	109.35
	2/5/2004	11.13	112.38	2.07	110.31
	5/4/2004	11.13	112.38	2.75	109.63
	8/9/2004	11.18	112.38	4.39	107.99
	11/5/2004	11.03	112.38	2.76	109.62
	2/6/2005	11.04	112.38	2.44	109.94
	5/13/2005	10.95	112.38	2.06	110.32
	8/9/2005	11.00	112.38	3.56	108.82
	11/9/2005	10.95	112.38	1.95	110.43
	3/8/2006	10.94	112.38	1.70	110.68

## Notes:

Bgs: Below Ground Surface

MSL: Mean Sea Level

**Table 4**  
**Groundwater Analytical Results from Monitoring Wells**  
 Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Sample Location	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)	EDC (ppb)	EDB (ppb)
MW-1	2nd Quarter	5/1/2002	ND < 50	ND < 0.3	0.3	ND < 0.6	ND < 0.3	10.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	ND < 50	ND < 50	----	----
	3rd Quarter	8/3/2002	91	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	114	ND < 0.5	7.5	ND < 0.5	ND < 100	ND < 50	ND < 50	----	----
	4th Quarter	11/4/2002	90.4	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	94.7	ND < 0.5	7.6	ND < 0.5	ND < 50	ND < 50	ND < 50	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	2nd Quarter	5/12/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	3rd Quarter	8/2/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	23	ND < 0.5	1.0	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	4th Quarter	11/8/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	88	ND < 0.5	3.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	2nd Quarter	5/4/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	3rd Quarter	8/9/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	34.0	ND < 0.5	1.2	ND < 0.5	ND < 50	160	ND < 500	ND < 0.5	ND < 0.5
	4th Quarter	11/5/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	14	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/6/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
	2nd Quarter	5/13/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
	3rd Quarter	8/9/2005	ND < 50.0	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	1.6	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
	4th Quarter	11/9/2005	ND < 50.0	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	12.9	ND < 0.5	0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
	1st Quarter	3/8/2006	ND < 50.0	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
MW-2	2nd Quarter	5/1/2002	498	ND < 0.3	ND < 0.3	3.9	1.3	1,380	ND < 0.5	552	ND < 0.5	ND < 100	ND < 50	ND < 50	----	----
	3rd Quarter	8/3/2002	8,870	15.7	0.5	3.9	2.2	8,160	ND < 0.5	3,460	ND < 0.5	ND < 100	ND < 50	ND < 50	----	----
	4th Quarter	11/4/2002	674	28.3	ND < 0.3	ND < 0.6	ND < 0.3	1,130	ND < 0.5	526	ND < 0.5	ND < 50	ND < 50	ND < 50	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2003	1,200	0.5	ND < 0.5	ND < 1	ND < 0.5	1,900	ND < 0.5	800	4.9	690	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	2nd Quarter	5/12/2003	540	ND < 50	ND < 50	ND < 100	ND < 50	730	ND < 50	140	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	3rd Quarter	8/2/2003	ND < 5,000	ND < 50	ND < 50	ND < 100	ND < 50	1,200	ND < 50	430	ND < 50	ND < 500	140	ND < 500	ND < 50	ND < 50
	4th Quarter	11/8/2003	790	ND < 50	ND < 50	ND < 100	ND < 50	4,200	ND < 50	1,800	ND < 50	ND < 500	150	ND < 500	ND < 50	ND < 50
	1st Quarter	2/5/2004	440	ND < 50	85	120	ND < 50	1,700	ND < 50	860	ND < 50	ND < 500	93	ND < 500	ND < 50	ND < 50
	2nd Quarter	5/4/2004	1,300	ND < 50	ND < 50	ND < 10.0	ND < 50	1,200	ND < 50	530	ND < 50	ND < 500	190	ND < 500	ND < 50	ND < 50
	3rd Quarter	8/9/2004	1,900	ND < 50	ND < 50	ND < 15.0	ND < 50	2,700	ND < 50	1,100	7.2	730	420	ND < 500	ND < 50	ND < 50
	4th Quarter	11/5/2004	1,400	5.8	ND < 50	ND < 15.0	ND < 50	970	ND < 50	460	ND < 50	230	160	ND < 500	ND < 50	ND < 50
	1st Quarter	2/6/2005	1,230	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	1,170	ND < 0.5	504	3.6	279	208	166	----	----
	2nd Quarter	5/13/2005	658	ND < 2.0	ND < 2.0	ND < 4.0	ND < 2.0	533	ND < 2.0	241	ND < 2.0	ND < 200	136	120	----	----
	3rd Quarter	8/9/2005	3,080	ND < 2.5	ND < 2.5	ND < 5.0	ND < 2.5	1,970	ND < 2.5	787	5.8	373	520	312	----	----
	4th Quarter	11/9/2005	1,680	ND < 50	ND < 50	ND < 10.0	ND < 50	1,980	ND < 50	760	5.7	ND < 500	408	253	----	----
	1st Quarter	3/8/2006	336	ND < 50	ND < 1.0	ND < 2.0	ND < 1.0	308	ND < 1.0	155	ND < 1.0	ND < 100	138	144	----	----
MW-3	2nd Quarter	5/1/2002	102	2.9	ND < 0.3	5.0	0.8	153	ND < 0.5	46.3	ND < 0.5	ND < 100	ND < 50	ND < 50	----	----
	3rd Quarter	8/3/2002	8,260	383	145	1,970	420	4,000	ND < 0.5	1,580	ND < 0.5	ND < 100	916	ND < 50	----	----
	4th Quarter	11/4/2002	537	30.8	0.7	39.5	24.9	928	ND < 0.5	358	ND < 0.5	ND < 50	ND < 50	ND < 50	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	100	ND < 0.5	27	ND < 0.5	17	ND < 50	ND < 500	1.6	ND < 0.5
	2nd Quarter	5/12/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	28	ND < 0.5	5.5	ND < 0.5	ND < 50	ND < 50	ND < 500	1.2	ND < 0.5
	3rd Quarter	8/2/2003	6,400	75	ND < 50	1,000	460	1,200	ND < 50	540	ND < 50	530	ND < 50	ND < 500	ND < 50	ND < 50
	4th Quarter	11/8/2003	52	ND < 0.5	ND < 0.5	1.2	0.5	120	ND < 0.5	68	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	40	ND < 0.5	9.4	ND < 0.5	ND < 50	ND < 50	ND < 500	0.9	ND < 0.5
	2nd Quarter	5/4/2004	82	ND < 0.5	ND < 0.5	0.5	ND < 0.5	57	ND < 0.5	32	ND < 0.5	ND < 50	55	ND < 500	ND < 0.5	ND < 0.5
	3rd Quarter	8/9/2004	970	6.0	ND < 0.5	ND < 1.5	3.6	1,500	ND < 0.5	530	ND < 0.5	90	250	ND < 500	1.5	ND < 0.5
	4th Quarter	11/5/2004	100	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	63	ND < 0.5	19	ND < 0.5	ND < 50	240	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/6/2005	183	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	172	ND < 0.5	56.1	ND < 0.5	ND < 50	51	95	----	----
	2nd Quarter	5/13/2005	183	ND < 1.2	ND < 1.2	ND < 2.5	ND < 1.2	163	ND < 1.2	52.6	ND < 1.2	ND < 125	70	84	----	----
	3rd Quarter	8/9/2005	379	ND < 1.0	ND < 1.0	ND < 2.0	ND < 1.0	252	ND < 1.0	102	ND < 1.0	ND < 100	63	76	----	----
	4th Quarter	11/9/2005	155	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	154	ND < 0.5	63.5	ND < 0.5	ND < 50.0	ND < 50	70	----	----
	1st Quarter	3/8/2006	54.8	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	50.5	ND < 0.5	14.0	ND < 0.5	ND < 50.0	55	ND < 50	----	----



**Table 4 (cont.)**  
**Groundwater Analytical Results from Monitoring Wells**  
 Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Sample Location	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)	EDC (ppb)	EDB (ppb)
MW-4	2nd Quarter	5/1/2002	7,970	157	356	1,270	483	ND < 20	ND < 5	ND < 5	ND < 5	ND < 1,000	489	ND < 50	----	----
	3rd Quarter	8/3/2002	9,150	193	720	2,430	1,080	53	ND < 15	ND < 15	ND < 15	ND < 5,000	2,770	ND < 50	----	----
	4th Quarter	11/4/2002	6,090	207	343	712	530	ND < 2.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	159	ND < 50	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2003	20,000	170	120	890	600	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	2,000	ND < 500	ND < 5.0	ND < 5.0
	2nd Quarter	5/12/2003	6,200	96	77	248	220	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	680	ND < 500	ND < 50	ND < 50
	3rd Quarter	8/2/2003	7,700	130	59	406	470	31	ND < 5.0	20	ND < 5.0	ND < 50	ND < 50	ND < 500	ND < 5.0	ND < 5.0
	4th Quarter	11/8/2003	7,900	260	190	385	480	56	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	500	ND < 500	ND < 5.0	ND < 5.0
	1st Quarter	2/5/2004	7,600	180	110	334	460	29	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	ND < 50	ND < 500	ND < 5.0	ND < 5.0
	2nd Quarter	5/4/2004	8,000	130	140	504	420	19	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	1,300	ND < 500	ND < 5.0	ND < 5.0
	3rd Quarter	8/9/2004	5,600	120	44	302	360	67	ND < 5.0	13	ND < 5.0	ND < 50	850	ND < 500	ND < 5.0	ND < 5.0
	4th Quarter	11/5/2004	58	1.0	ND < 0.5	ND < 1.5	ND < 0.5	6.7	ND < 0.5	2.8	ND < 0.5	ND < 5.0	120	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/6/2005	6,230	83.5	120	602	343	11.5	ND < 2.0	ND < 2.0	ND < 2.0	ND < 200	729	121	----	----
	2nd Quarter	5/13/2005	3,950	31.4	80.4	493	193	ND < 5.0	ND < 2.5	ND < 2.5	ND < 2.5	ND < 250	708	106	----	----
	3rd Quarter	8/9/2005	5,270	59.5	53.2	299	210	14.2	ND < 1.2	1.9	ND < 1.2	ND < 125	929	147	----	----
	4th Quarter	11/9/2005	5,040	79.3	72.1	202	219	23.3	ND < 0.5	1.2	ND < 0.5	ND < 50	1,020	127	----	----
	1st Quarter	3/8/2006	5,150	45.4	98.5	607	229	4.0	ND < 1.0	ND < 1.0	ND < 1.0	ND < 100	610	147	----	----
MW-5	2nd Quarter	5/1/2002	63,800	ND < 150	1,270	19,500	1,720	ND < 1,000	ND < 250	ND < 250	ND < 250	ND < 50,000	4,420	396	----	----
	3rd Quarter	8/3/2002	30,500	ND < 15	486	17,700	1,760	ND < 25	ND < 15	ND < 15	ND < 15	ND < 5,000	9,630	ND < 50	----	----
	4th Quarter	11/4/2002	81,000	789	ND < 300	24,600	3,710	2,330	ND < 500	1,570	ND < 500	ND < 100,000	3,870	ND < 50	ND < 500	ND < 500
	1st Quarter	2/5/2003	78,000	51	1,600	16,800	1,600	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	2nd Quarter	5/12/2003	43,000	ND < 50	790	13,400	1,200	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	4,100	ND < 500	ND < 50	ND < 50
	3rd Quarter	8/2/2003	17,000	ND < 50	120	3,890	400	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	4th Quarter	11/8/2003	43,000	ND < 50	760	16,100	1,500	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	4,100	ND < 500	ND < 50	ND < 50
	1st Quarter	2/5/2004	39,000	50	1,400	22,500	2,000	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	2nd Quarter	5/4/2004	54,000	ND < 50	720	12,800	1,300	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	19,000	ND < 500	ND < 50	ND < 50
	3rd Quarter	8/9/2004	37,000	ND < 50	320	10,000	1,100	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	8,500	ND < 500	ND < 50	ND < 50
	4th Quarter	11/5/2004	9,800	ND < 50	68	1,940	170	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	890	ND < 500	ND < 50	ND < 50
	1st Quarter	2/6/2005	13,800	5.5	174	4,090	407	ND < 10	ND < 5.0	ND < 5.0	ND < 5.0	ND < 500	1,650	151	----	----
	2nd Quarter	5/13/2005	12,600	ND < 10	197	4,050	393	ND < 20	ND < 10	ND < 10	ND < 10	ND < 1,000	1,190	113	----	----
	3rd Quarter	8/9/2005	12,000	ND < 10.0	45.8	3,160	322	ND < 20.0	ND < 10.0	ND < 10.0	ND < 10.0	ND < 1,000	1,350	177	----	----
	4th Quarter	11/9/2005	4,590	2.7	29.1	1,440	141	ND < 5.0	ND < 2.5	ND < 2.5	ND < 2.5	ND < 250	825	179	----	----
	1st Quarter	3/8/2006	11,700	3.8	107	3,800	330	ND < 2.0	ND < 1.5	ND < 1.0	ND < 1.0	ND < 100	987	165	----	----
MW-6	2nd Quarter	5/1/2002	3,750	845	576	1,070	155	980	ND < 0.5	791	ND < 0.5	ND < 100	ND < 50	ND < 50	----	----
	3rd Quarter	8/3/2002	11,800	508	62	8,630	1,640	750	ND < 15	300	ND < 15	ND < 5,000	1,900	ND < 50	----	----
	4th Quarter	11/4/2002	9,480	535	35.2	3,420	743	1,330	ND < 0.5	558	ND < 0.5	ND < 50	190	ND < 50	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2003	4,500	20	ND < 5.0	583	190	ND < 5.0	ND < 5.0	17	ND < 5.0	ND < 50	1,200	ND < 500	ND < 5.0	ND < 5.0
	2nd Quarter	5/12/2003	2,200	22	1.2	244	160	68	ND < 0.5	14	ND < 0.5	60	280	ND < 500	0.9	ND < 0.5
	3rd Quarter	8/2/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 50	2,500	ND < 0.5	ND < 0.5
	4th Quarter	11/8/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	1.3	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/5/2004	110	4.2	ND < 0.5	ND < 1.0	ND < 0.5	16	ND < 0.5	5.6	ND < 0.5	ND < 5.0	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	2nd Quarter	5/4/2004	2,200	25	2.4	200.5	4.0	69	ND < 0.5	17	ND < 0.5	27	590	ND < 500	ND < 0.5	ND < 0.5
	3rd Quarter	8/9/2004	880	14	ND < 5.0	ND < 15	ND < 5.0	220	ND < 5.0	16	ND < 5.0	280	470	ND < 500	ND < 5.0	ND < 5.0
	4th Quarter	11/5/2004	110	3.6	ND < 0.5	ND < 1.5	ND < 0.5	16	ND < 0.5	3.2	ND < 0.5	ND < 5.0	1,000	ND < 500	ND < 0.5	ND < 0.5
	1st Quarter	2/6/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	3.6	ND < 0.5	1.0	ND < 0.5	ND < 50	ND < 50	86	----	----
	2nd Quarter	5/13/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	2.1	ND < 0.5	0.8	ND < 0.5	ND < 50	ND < 50	71	----	----
	3rd Quarter	8/9/2005	ND < 50.0	0.8	ND < 0.5	ND < 1.0	ND < 0.5	8.2	ND < 0.5	3.2	ND < 0.5	ND < 50.0	ND < 50	87	----	----
	4th Quarter	11/9/2005	167	2.2	ND < 0.5	ND < 1.0	ND < 0.5	14.5	ND < 0.5	5.7	ND < 0.5	ND < 50.0	83	255	----	----
	1st Quarter	3/8/2006	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl ether

TAME: Tertiary amyl methyl ether

TPHd: Total petroleum hydrocarbons as diesel

TBA: Tertiary butanol

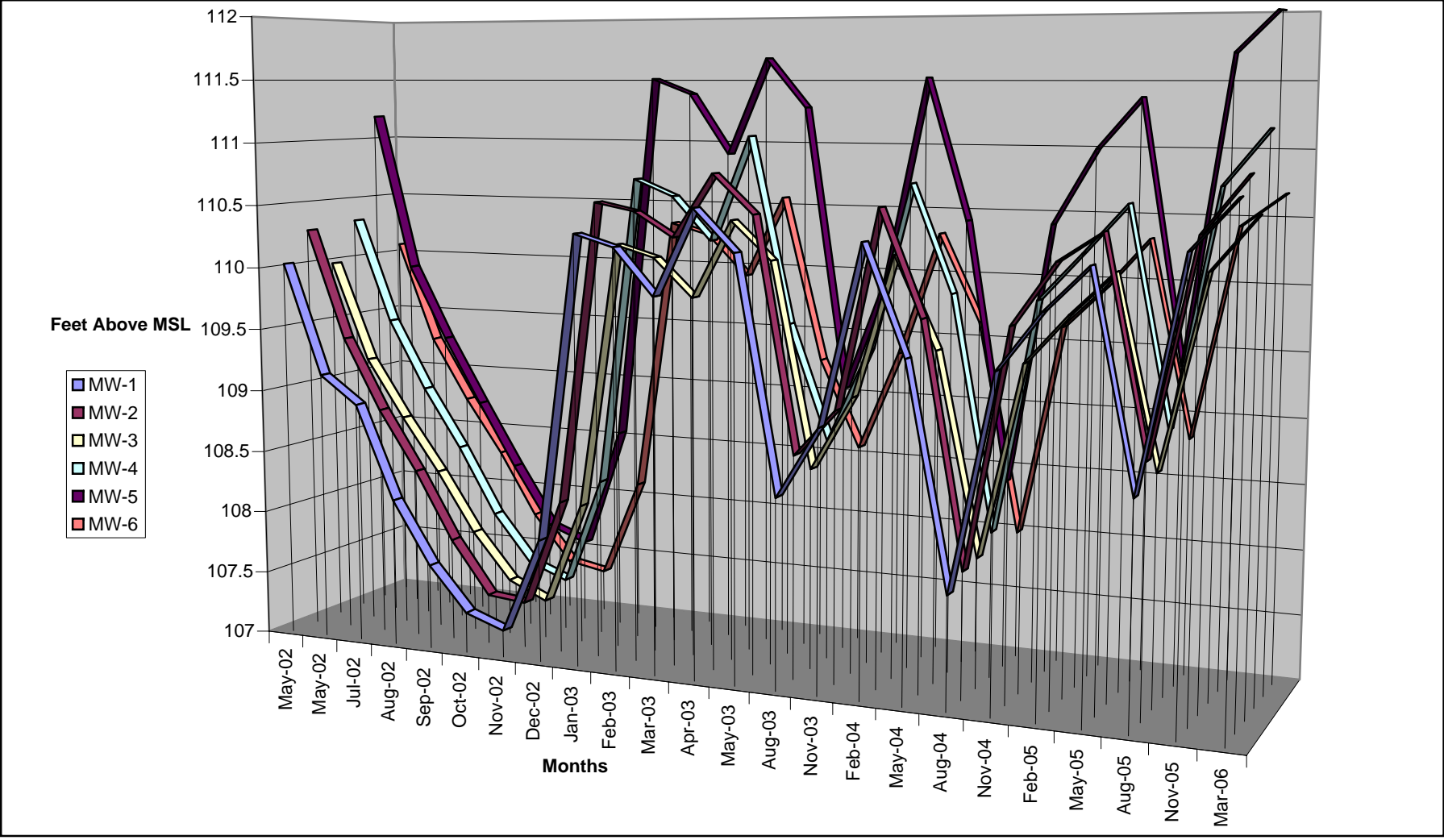
ETBE: Ethyl tertiary butyl ether

TPHmo: Total petroleum hydrocarbons as motor oil

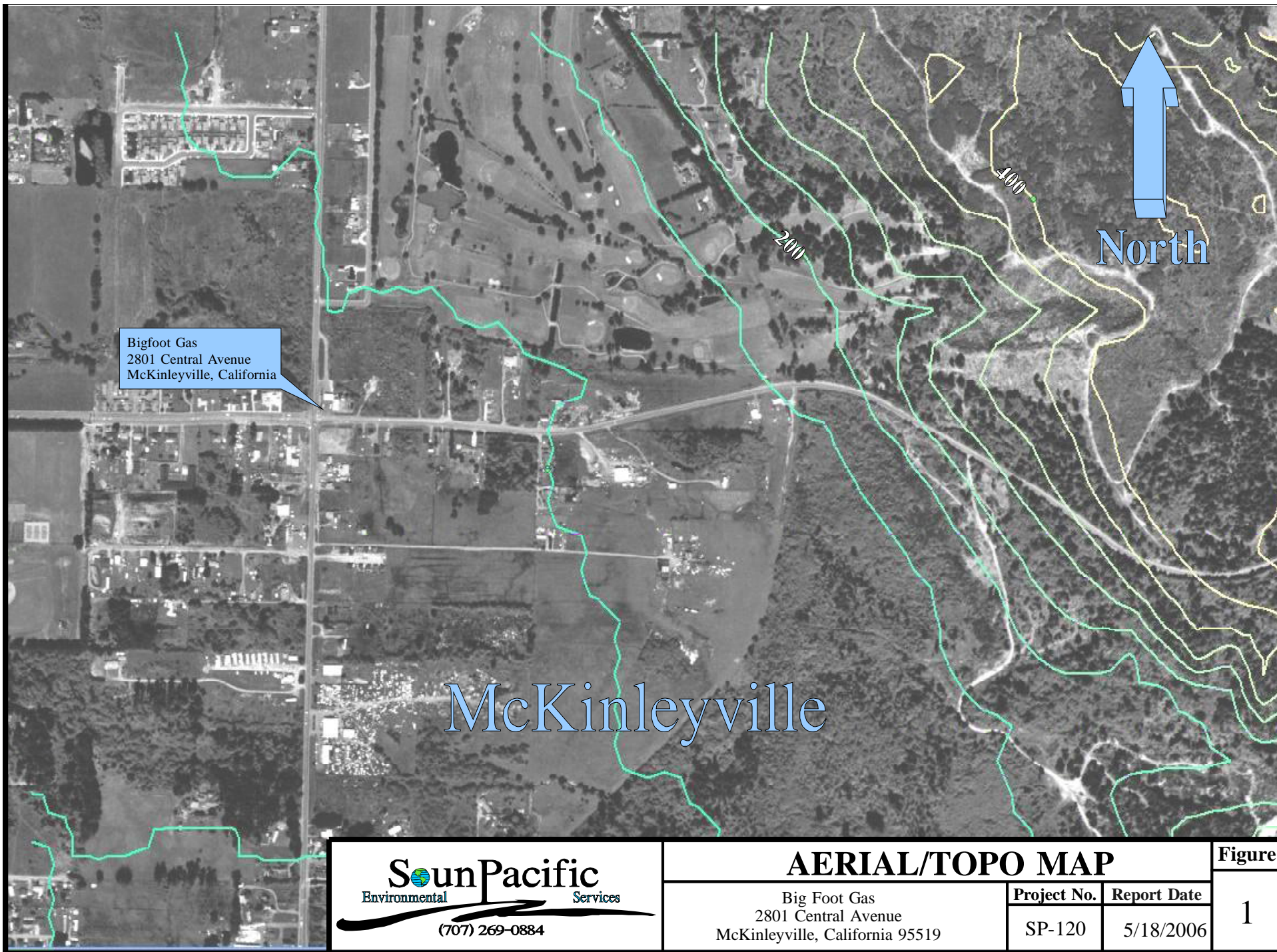
ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.

ND: Not detected. Sample was detected at or below the method detection limit as shown.

**Chart 1**  
**Hydrograph**  
Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

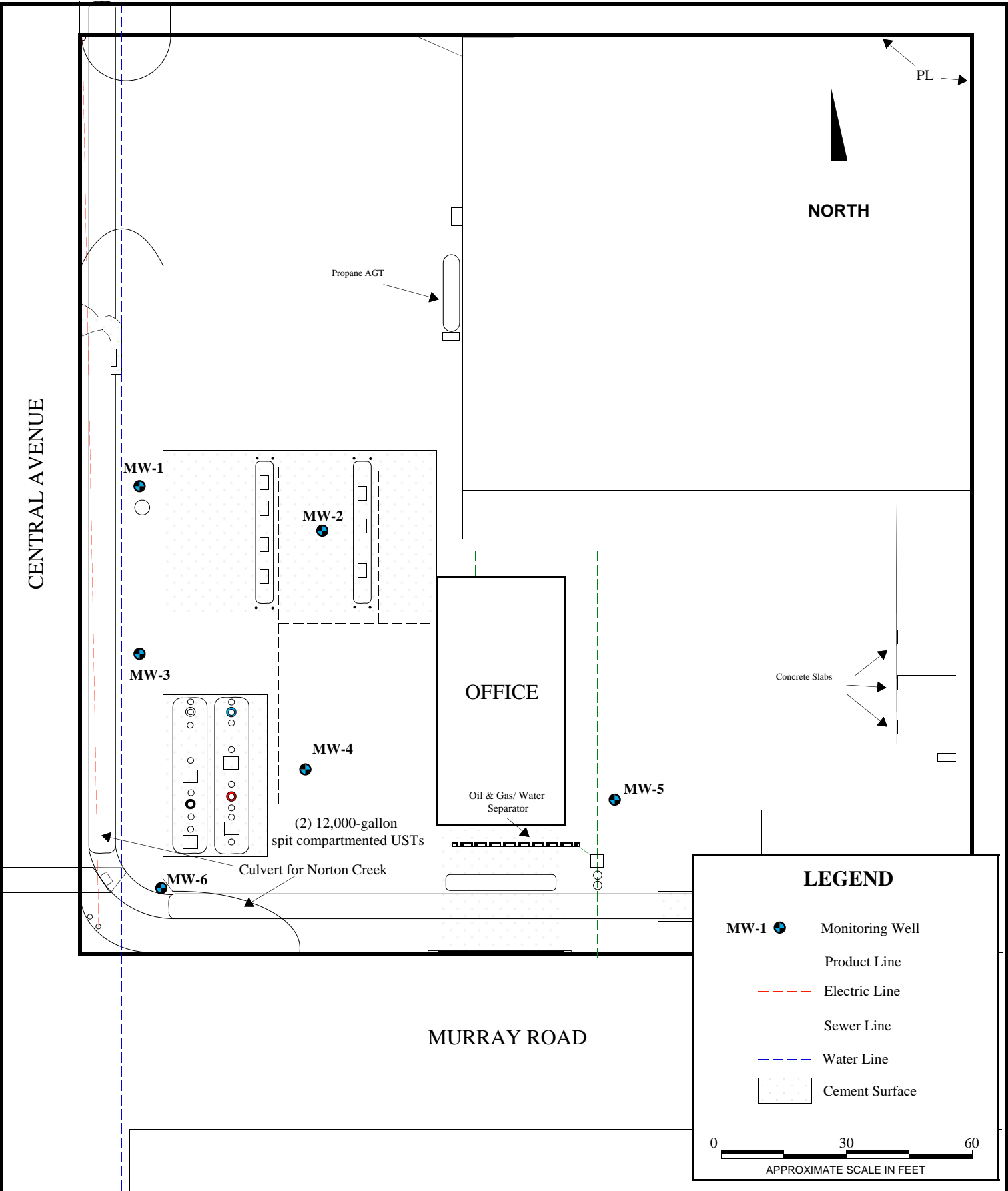


# Figures



	<b>AERIAL/TOPO MAP</b>		<b>Figure</b>
	Big Foot Gas 2801 Central Avenue McKinleyville, California 95519	<b>Project No.</b>	
		SP-120	<b>Report Date</b> 5/18/2006
			1





## SITE PLAN

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

SP-120

Report Date

5/18/06











Figure

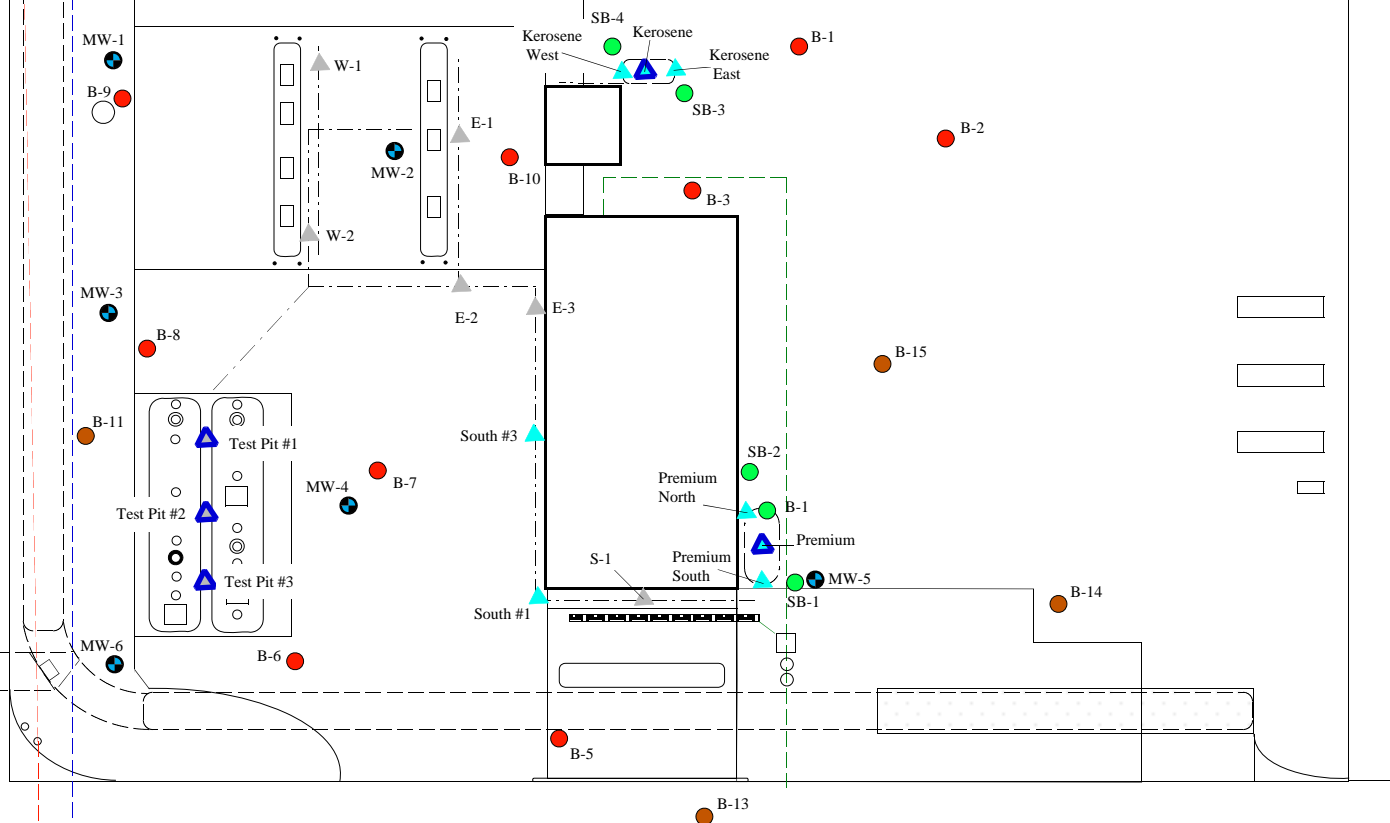
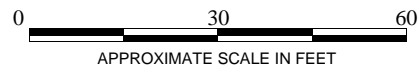
2

CENTRAL AVENUE

NORTH

# LEGEND

-  Removed UST
-  Product Lines
- BF East #1**  Soil Sample (6/91)
- Test Pit #1**  Groundwater Sample (5/91)
- South #1**  Soil Sample (7/91)
- Premium**  Groundwater Sample (7/91)
- SB-4**  Previously Drilled Soil Boring (1995)
- B-1**  Previously Drilled Soil Boring (9/00)
- B-11**  Previously Drilled Soil Boring (4/02)
- MW-1**  Existing Monitoring Well



MURRAY ROAD

## SAMPLE LOCATION MAP

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

SP-120

Report Date

5/18/06

Figure

3

Environmental

Services

CENTRAL AVENUE

NORTH

Elevation Above  
MSL

PL →

### MW-1

Casing Elevation: 111.57  
Depth to Water: 0.83  
Elevation above MSL: 110.74

### MW-3

Casing Elevation: 112.13  
Depth to Water: 1.55  
Elevation above MSL: 110.58

### MW-2

Casing Elevation: 113.03  
Depth to Water: 2.15  
Elevation above MSL: 110.88

### MW-5

Casing Elevation: 112.62  
Depth to Water: 0.59  
Elevation above MSL: 112.03

### MW-4

Casing Elevation: 112.76  
Depth to Water: 1.59  
Elevation above MSL: 111.17

### MW-6

Casing Elevation: 112.38  
Depth to Water: 1.70  
Elevation above MSL: 110.68

MURRAY ROAD

**GW Flow Direction: W**  
**GW Gradient: 0.01 ft/ft**

### LEGEND



Monitoring Well

0 30 60

APPROXIMATE SCALE IN FEET

## GROUNDWATER GRADIENT MAP MARCH 2006

Figure

4

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.  
SP-120

Report Date  
5/18/06

Environmental

Services

CENTRAL AVENUE

NORTH

PL →

**Groundwater Results  
MW-1**

All results non-detect

**Groundwater Results  
MW-2**

TPHg	336	ppb
MTBE	308	ppb
TAME	155	ppb
TPHd	138	ppb
TPHmo	144	ppb

**Groundwater Results  
MW-3**

TPHg	54.8	ppb
MTBE	50.5	ppb
TAME	14.0	ppb
TPHd	55	ppb

**Groundwater Results  
MW-5**

TPHg	11,700	ppb
BTXE	4,240.8	ppb
TPHd	987	ppb
TPHmo	165	ppb

**Groundwater Results  
MW-4**

TPHg	5,150	ppb
BTXE	979.9	ppb
MTBE	4.0	ppb
TPHd	610	ppb
TPHmo	147	ppb

**Groundwater Results  
MW-6**

All results non-detect

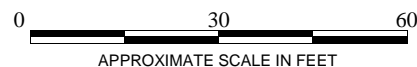
OFFICE

MURRAY ROAD

**LEGEND**



Monitoring Well



**GROUNDWATER ANALYTICAL RESULTS**

Figure

5

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

SP-120

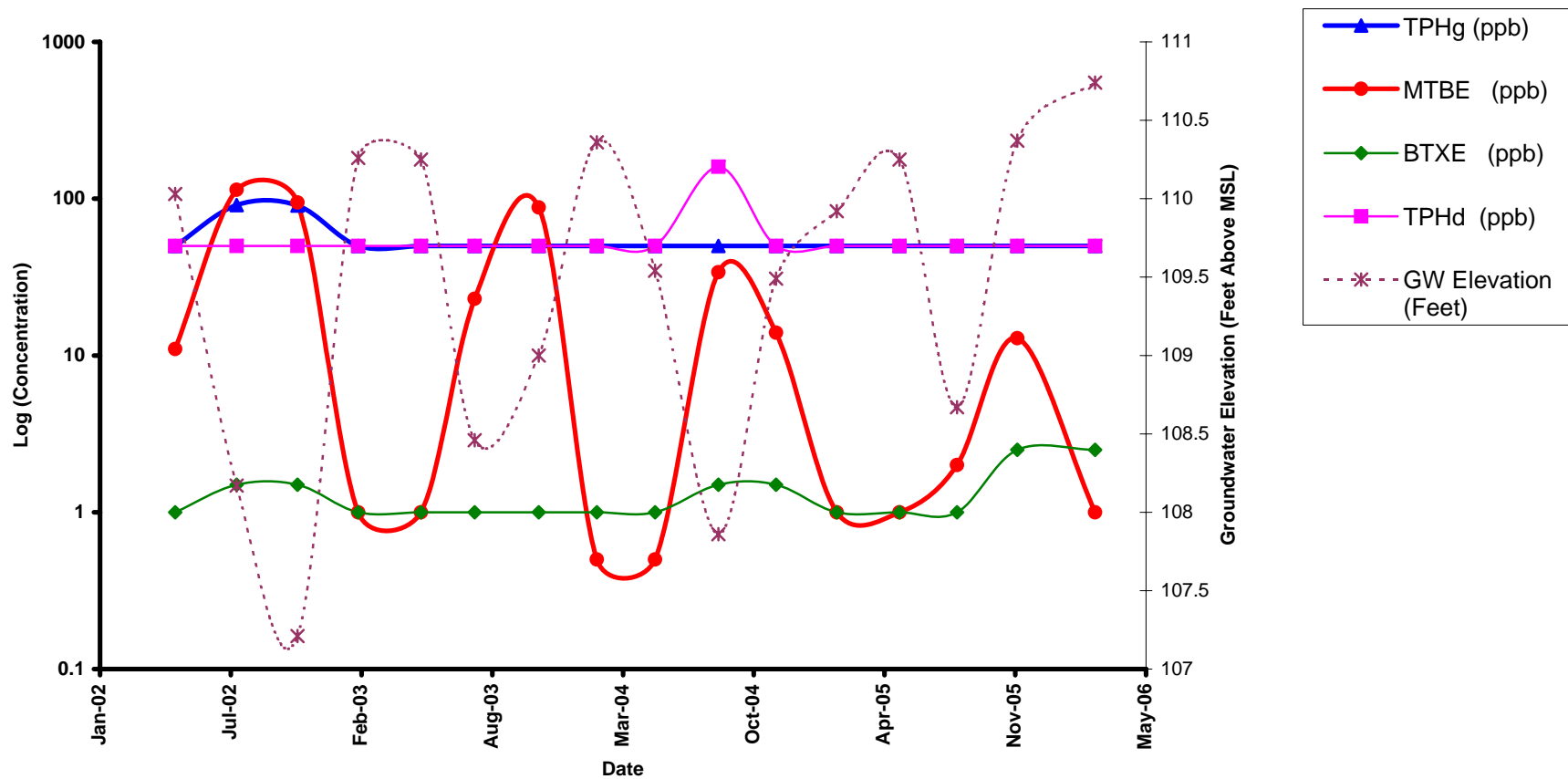
Report Date

5/18/06

Environmental

Services





### MW-1 HYDROCARBON CONCENTRATIONS VS. TIME

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

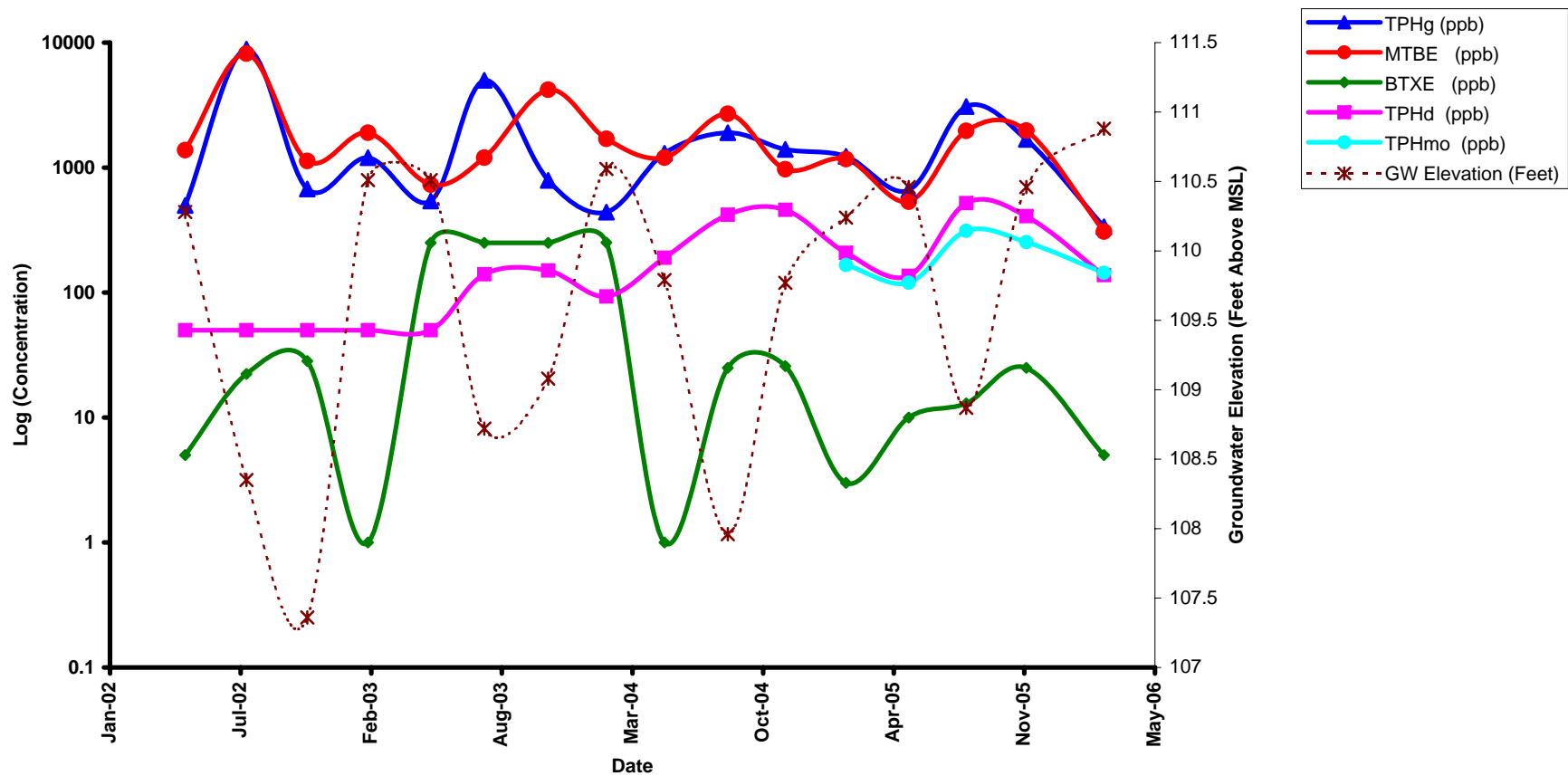
SP-120

Date

5/18/2006

Figure

6



**SounPacific**  
 Environmental Services  
 (707) 269-0884

### MW-2 HYDROCARBON CONCENTRATIONS VS. TIME

Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Project No.

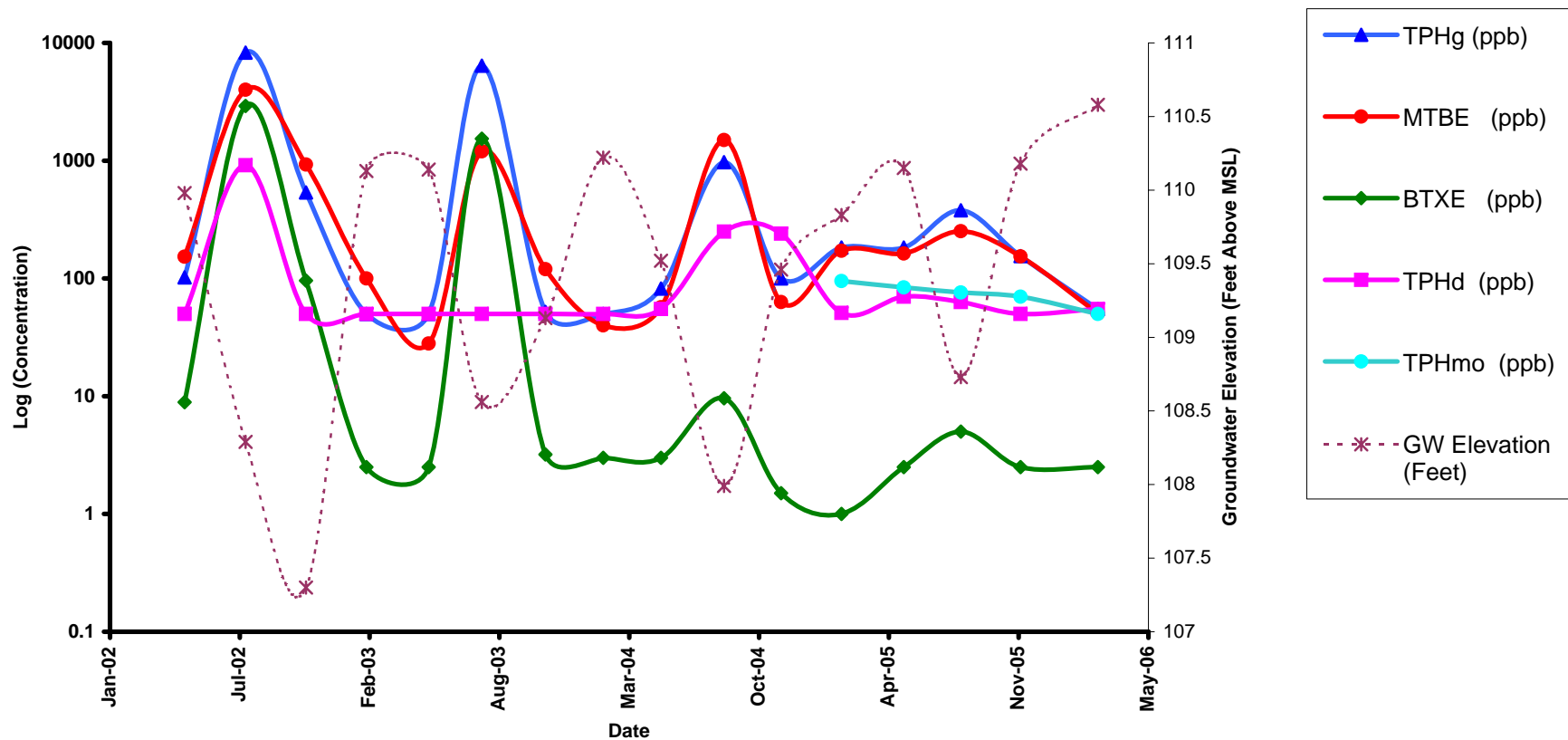
SP-120

Date

5/18/2006

Figure

7



**SounPacific**  
 Environmental Services  
 (707) 269-0884

### MW-3 HYDROCARBON CONCENTRATIONS VS. TIME

Big Foot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Project No.

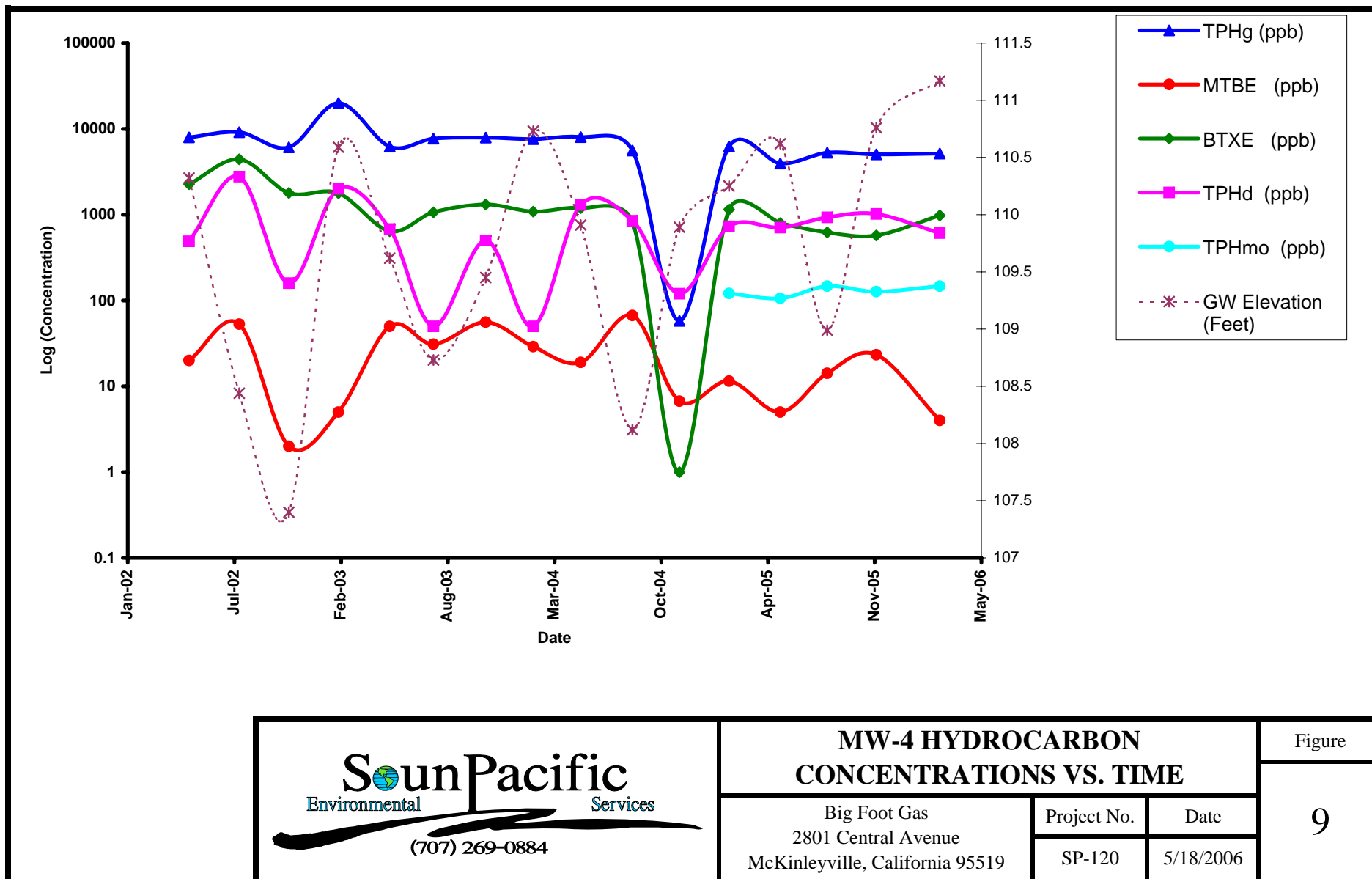
SP-120

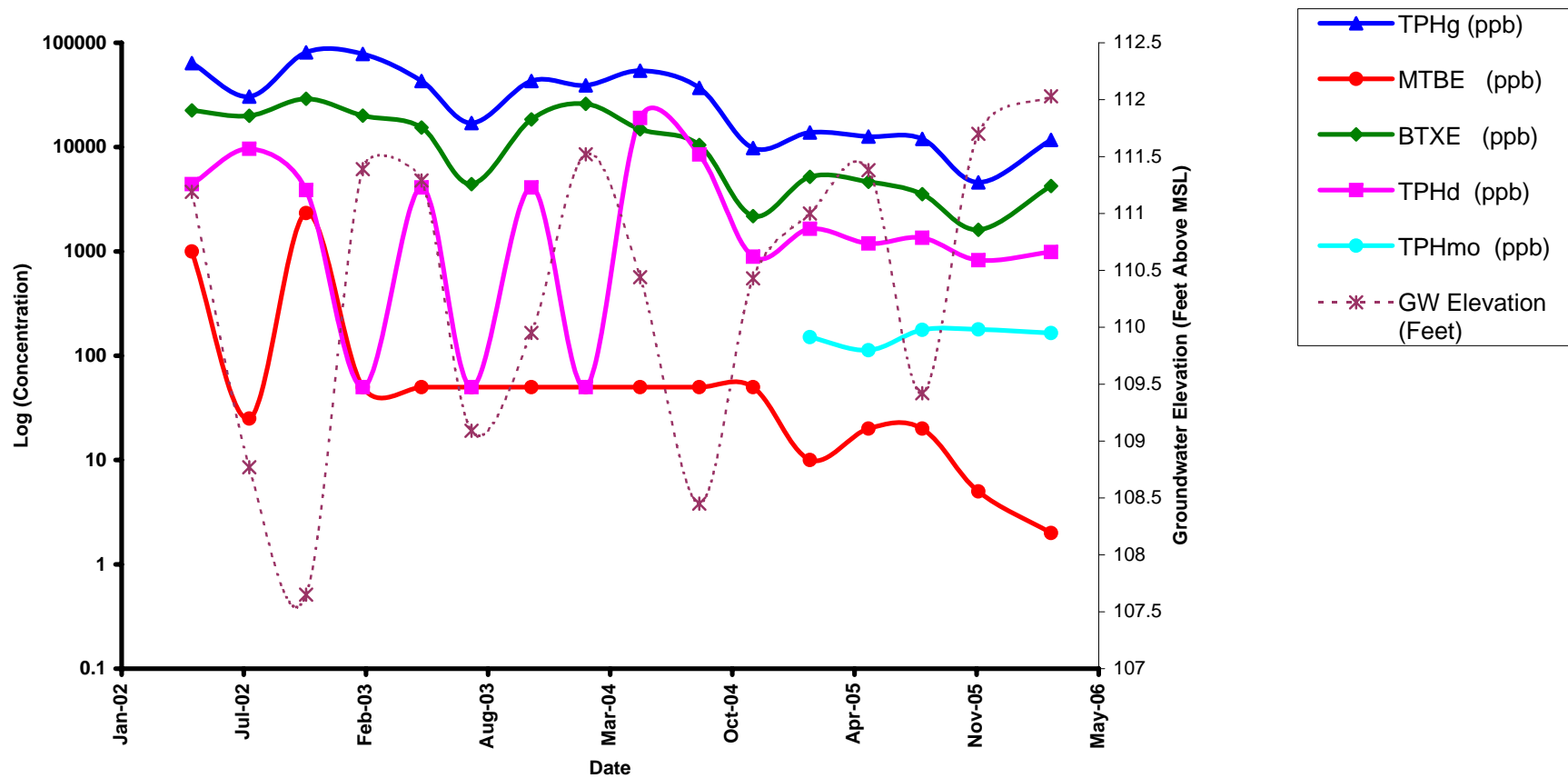
Date

5/18/2006

Figure

8





**Soun Pacific**  
Environmental Services  
(707) 269-0884

### MW-5 HYDROCARBON CONCENTRATIONS VS. TIME

Big Foot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

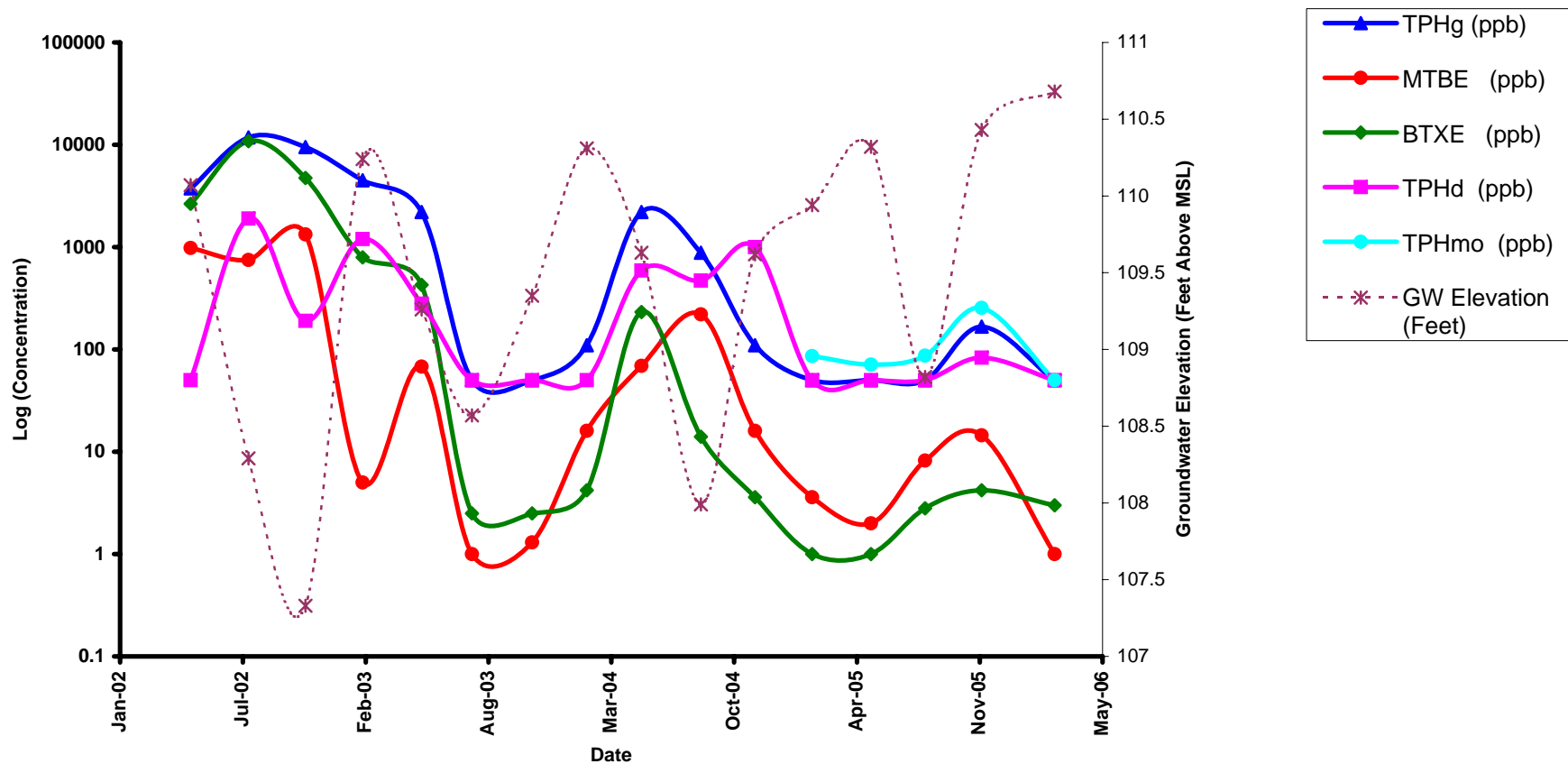
SP-120

Date

5/18/2006

Figure

10



# Appendices

# **Appendix A**





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voice 530.243.7234 2218 Railroad Avenue  
fax 530.243.7494 Redding, California 96001

April 11, 2006

**Lab ID: 6030534**

Andy Malone  
SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
RE: BIGFOOT GAS SP-120

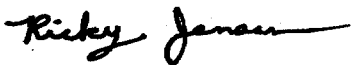
Dear Andy Malone,

Enclosed are the analysis results for Work Order number 6030534. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

  
For



Ricky D. Jensen  
Laboratory Director

California ELAP Certification Number 1677



www.basiclab.com

voice 530.243.7234 2218 Railroad Avenue  
fax 530.243.7494 Redding, California 96001

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

**Attention:** Andy Malone

**Project:** BIGFOOT GAS SP-120

**Lab No:** 6030534  
**Reported:** 04/11/06  
**Phone:** 707-269-0884  
**P.O. #**

**Volatile Organic Compounds**

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
<b>MW-1 Water (6030534-01) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Gasoline	ug/l	ND			50.0	EPA 8015/8260	03/15/06	03/15/06	B6C0436
Benzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
Methyl tert-butyl ether	"	ND			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	ND			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		92.0 %		43-155		"	"	"	"
<b>MW-2 Water (6030534-02) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Gasoline	ug/l	336	G-03, R-07		100	EPA 8015/8260	03/15/06	03/15/06	B6C0436
Benzene	"	ND	R-07		1.0	"	"	"	"
Toluene	"	ND	R-07		1.0	"	"	"	"
Ethylbenzene	"	ND	R-07		1.0	"	"	"	"
Xylenes (total)	"	ND	R-07		2.0	"	"	"	"
Methyl tert-butyl ether	"	308	R-01, R-07		10.0	"	03/15/06	"	"
Di-isopropyl ether	"	ND	R-07		1.0	"	03/15/06	"	"
Tert-amyl methyl ether	"	155	R-07		1.0	"	"	"	"
Ethyl tert-butyl ether	"	ND	R-07		1.0	"	"	"	"
Tert-butyl alcohol	"	ND	R-07		100	"	"	"	"
Surrogate: 4-Bromofluorobenzene		91.8 %		43-155		"	"	"	"
<b>MW-3 Water (6030534-03) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Gasoline	ug/l	54.8	G-03		50.0	EPA 8015/8260	03/15/06	03/15/06	B6C0436
Benzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
Methyl tert-butyl ether	"	50.5			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	14.0			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		91.0 %		43-155		"	"	"	"
<b>MW-4 Water (6030534-04) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Gasoline	ug/l	5150	R-01, R-07		500	EPA 8015/8260	03/15/06	03/15/06	B6C0436
Benzene	"	45.4	R-07		1.0	"	03/15/06	"	"
Toluene	"	98.5	R-07		1.0	"	"	"	"
Ethylbenzene	"	229	R-01, R-07		5.0	"	03/15/06	"	"
Xylenes (total)	"	607	R-01, R-07		10.0	"	"	"	"
Methyl tert-butyl ether	"	4.0	R-07		2.0	"	03/15/06	"	"
Di-isopropyl ether	"	ND	R-07		1.0	"	"	"	"
Tert-amyl methyl ether	"	ND	R-07		1.0	"	"	"	"
Ethyl tert-butyl ether	"	ND	R-07		1.0	"	"	"	"
Tert-butyl alcohol	"	ND	R-07		100	"	"	"	"
Surrogate: 4-Bromofluorobenzene		94.8 %		43-155		"	"	"	"
<b>MW-5 Water (6030534-05) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Gasoline	ug/l	11700	R-01, R-07		1000	EPA 8015/8260	03/15/06	03/15/06	B6C0436
Benzene	"	3.8	R-07		1.0	"	03/15/06	"	"
Toluene	"	107	R-07		1.0	"	"	"	"

*Kathy Jensen*

Approved By

Basic Laboratory, Inc.  
California D.O.H.S. Cert #1677



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fax 530.243.7494 Redding, California 96001

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

**Attention:** Andy Malone  
**Project:** BIGFOOT GAS SP-120

**Lab No:** 6030534  
**Reported:** 04/11/06  
**Phone:** 707-269-0884  
**P.O. #**

**Volatile Organic Compounds**

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
<b>MW-5 Water (6030534-05) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Ethylbenzene	"	330	R-01, R-07		10.0	"	03/15/06	03/15/06	"
Xylenes (total)	"	3800	R-01, R-07		20.0	"	"	"	"
Methyl tert-butyl ether	"	ND	R-07		2.0	"	03/15/06	"	"
Di-isopropyl ether	"	ND	R-07		1.0	"	"	"	"
Tert-amyl methyl ether	"	ND	R-07		1.0	"	"	"	"
Ethyl tert-butyl ether	"	ND	R-07		1.0	"	"	"	"
Tert-butyl alcohol	"	ND	R-07		100	"	"	"	"
Surrogate: 4-Bromofluorobenzene		102 %			43-155	"	"	"	"
<b>MW-6 Water (6030534-06) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Gasoline	ug/l	ND			50.0	EPA 8015/8260	03/15/06	03/15/06	B6C0436
Benzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
Methyl tert-butyl ether	"	ND			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	ND			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		90.8 %			43-155	"	"	"	"



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**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

**Attention:** Andy Malone

**Project:** BIGFOOT GAS SP-120

**Lab No:** 6030534  
**Reported:** 04/11/06  
**Phone:** 707-269-0884  
**P.O. #**

**TPH Diesel & Motor Oil**

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
<b>MW-1 Water (6030534-01) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Diesel	ug/l	ND			50	EPA 8015 MOD	04/05/06	03/17/06	B6C0486
Motor Oil	"	ND			50	"	"	"	"
Surrogate: Octacosane		117 %		50-150		"	"	"	"
<b>MW-2 Water (6030534-02) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Diesel	ug/l	138			50	EPA 8015 MOD	04/06/06	03/17/06	B6C0486
Motor Oil	"	144			50	"	"	"	"
Surrogate: Octacosane		101 %		50-150		"	"	"	"
<b>MW-3 Water (6030534-03) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Diesel	ug/l	55			50	EPA 8015 MOD	04/06/06	03/17/06	B6C0486
Motor Oil	"	ND			50	"	"	"	"
Surrogate: Octacosane		87.0 %		50-150		"	"	"	"
<b>MW-4 Water (6030534-04) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Diesel	ug/l	610	D-01		50	EPA 8015 MOD	04/06/06	03/17/06	B6C0486
Motor Oil	"	147			50	"	"	"	"
Surrogate: Octacosane		102 %		50-150		"	"	"	"
<b>MW-5 Water (6030534-05) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Diesel	ug/l	987	D-01		50	EPA 8015 MOD	04/06/06	03/17/06	B6C0486
Motor Oil	"	165			50	"	"	"	"
Surrogate: Octacosane		104 %		50-150		"	"	"	"
<b>MW-6 Water (6030534-06) Sampled:03/08/06 00:00 Received:03/14/06 14:27</b>									
Diesel	ug/l	ND			50	EPA 8015 MOD	04/06/06	03/17/06	B6C0486
Motor Oil	"	ND			50	"	"	"	"
Surrogate: Octacosane		102 %		50-150		"	"	"	"



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fax 530.243.7494 Redding, California 96001

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
**Attention:** Andy Malone  
**Project:** BIGFOOT GAS SP-120

**Lab No:** 6030534  
**Reported:** 04/11/06  
**Phone:** 707-269-0884  
**P.O. #**

### Notes and Definitions

R-07 The sample was diluted due to the presence of high levels of target analytes resulting in elevated reporting limits.  
R-01 The Reporting Limit and Detection Limit for this analyte have been raised due to necessary sample dilution.  
G-03 The GRO result reported for this sample does not match the laboratory's gasoline standard, but is due primarily to MTBE.  
D-01 This sample appears to contain volatile range organics.  
DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference  
< Less than reporting limit  
≤ Less than or equal to reporting limit  
> Greater than reporting limit  
≥ Greater than or equal to reporting limit  
MDL Method Detection Limit  
RL/ML Minimum Level of Quantitation  
MCL/AL Maximum Contaminant Level/Action Level  
mg/kg Results reported as wet weight  
TTLC Total Threshold Limit Concentration  
STLC Soluble Threshold Limit Concentration  
TCLP Toxicity Characteristic Leachate Procedure

Approved By

Basic Laboratory, Inc.  
California D.O.H.S. Cert #1677



**BASIC LABORATORY CHAIN OF CUSTODY RECORD**  
 2218 Railroad Ave., Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

LAB #: **6030534**  
 SAMPLE TYPE: **Water**  
 # OF SAMPLES: **6**  
 PAGE **1** OF **1**

CLIENT NAME: **SounPacific**  
 ADDRESS: **P.O. Box 13**  
**Kneeland, CA 95549**

PROJECT NAME: **Big Foot Gas**  
 PROJECT #: **SP-120**  
 REQUESTED COMP. DATE: **Standard 3/6/06**  
 STATE FORMS? ☐  
 TURN AROUND TIME: STD ☒ RUSH ☐

PROJECT MANAGER: **Andy Malone**  
 PHONE: **707-269-0884** FAX: **707-269-0699** E-MAIL: **andy@SounPacific.com**  
 INVOICE TO: **SounPacific** PO#: **89650** SounPacific.com  
 SPECIAL MAIL ☐ E-MAIL ☒ FAX ☐ EDT ☐

ANALYSIS REQUESTED

# OF BOTTLES	1ALg (EPA 8260b)	BTX (EPA 8260b)	5 Gys (EPA 8260b)	TPH (EPA 8015)	TPH (EPA 8015)
5	X	X	X	X	X

REP: **RECEIVED**  
 ID#: **TC602300275**  
 SYSTEM#: **QC-1 2 3 4**  
 GLOBAL ID #: **TC602300275**  
 REMARKS

DATE	TIME	WATER	COMP	SOIL	SAMPLE DESCRIPTION
3-8-06		X			MW-1
					MW-2
					MW-3
					MW-4
					MW-5
					MW-6

# OF BOTTLES	1ALg (EPA 8260b)	BTX (EPA 8260b)	5 Gys (EPA 8260b)	TPH (EPA 8015)	TPH (EPA 8015)
5	X	X	X	X	X

*See Grid*

*We are missing the COC & Samples 3 & 4. Client has been notified.*

PRESERVED WITH: HNO<sub>3</sub> ☐ H<sub>2</sub>SO<sub>4</sub> ☐ NaOH ☐ ZnAc<sub>2</sub>/NaOH ☐ HCL ☒ NaThio ☐ OTHER \_\_\_\_\_

SAMPLED BY: **Tarik Sounhein** DATE/TIME: **3-8-06** RELINQUISHED BY: **Tien-yu Tan** DATE/TIME: **3-10-06**  
 RECEIVED BY: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_ RELINQUISHED BY: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_  
 RECEIVED BY: (SAMPLES UNVERIFIED) \_\_\_\_\_ DATE/TIME: \_\_\_\_\_ RELINQUISHED BY: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_  
 RECEIVED BY LAB: (VERIFIED) **3/14/06 14:27** SAMPLES SHIPPED VIA: **UPS** FEDEX POST BUS OTHER \_\_\_\_\_

## **Appendix B**





# **Standard Operating Procedures**

## **Groundwater Level Measurements and Free Phase Hydrocarbon Measurements**

All SounPacific staff and contractors shall adopt the following procedures any time that groundwater elevations are determined for the purposes of establishing groundwater gradient and direction, and prior to any sampling event.

Wells are to be tested for free phase hydrocarbons (free product) before the first development or sampling of any new well, and in any well that has historically contained free product.

### **Equipment Checklist**

- ☐ Combination water level / free phase hydrocarbon indicator probe (probe)
- ☐ Gauging Data / Purge Calculations Sheet
- ☐ Pencil or Pen/sharpie
- ☐ Disposable Gloves
- ☐ Distilled Water and or know water source on site that is clean
- ☐ Alconox (powder) or Liquinox (liquid) non-phosphate cleaners—do not use soap!
- ☐ Buckets or Tubs for decontamination station
- ☐ Tools necessary to access wells
- ☐ Site Safety Plan
- ☐ This Standard Operating Procedure
- ☐ Notify Job site business that you will be arriving to conduct work.

### **Procedure**

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Access and open all monitoring wells to be measured. Allow wells to equilibrate for approximately 15 minutes before taking any measurements.

3. Decontaminate probe with Alconox or Liquinox solution, and rinse with distilled water.
4. Determine the diameter of the well to be measured and indicate this on the Gauging Data / Purge Calculations Sheet.
5. Words of caution: Please be careful with water level and product meters probes are not attached with high strength material so please make sure to avoid catching the end on anything in the well and make sure not to wind reel to the point that it could pull on the probe. ***If product is suspect in a well, go to step 6, if no product is suspected go to step 7 below.***
6. **When product is present or suspected:** use the product level meter. Clip the static charge clamp to the side of the well casing. Then lower probe into the well through the product/water interface about one foot if possible. Then slowly raise the probe back up through the product/water interface layer and record the level as the tone changes from solid to broken-record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTP). Continue to raise the probe up through the product until the tone stops completely-record this level on the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW). Then go to step 8.
7. **When no product is present or suspected:** If no free product is present, record the depth of the water (to the nearest 0.01 foot) relative to the painted black mark on the top of the well casing. Leave the probe in the well just a hair above the water level to ensure the well as equilibrated. As the well rises, the tone will sound. Make sure no increase in water levels have occurred in over a ten-minute period. Water levels can lower as well as rise. Make sure you note when the level you keep lowering the probe to has remained stable for at least ten minutes. Once this has been accomplished, please record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW).
8. Turn off the probe, and use the probe to determine the depth to the bottom of the well relative to the top of the well casing. This is the depth to bottom measurement (DTB).
9. Decontaminate probe and tape by washing in an Alconox/Liquinox solution (***read directions on solution for ratio of water to cleanser***) and use the toothbrush provided to remove any foreign substance from the probe and tape. Then triple rinse probe and tape with clean water and then proceed to take measurements in the next well.
10. If sampling is to occur, proceed to implement SounPacific's Standard Operating Procedure for Monitoring Well Purging and Sampling. If no sampling is to be performed, close and secure all wells and caps.



## Standard Operating Procedures

### Monitoring Well Purging and Groundwater Sampling

All SounPacific employees and contractors shall adopt the following procedures any time that groundwater samples are to be taken from an existing groundwater monitoring well.

Prior to the implementation of these procedures, the groundwater level **MUST** be measured and the presence of free phase hydrocarbons determined in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### Equipment Checklist

- ☐ Gauging Data / Purge Calculations Sheet used for water level determination
- ☐ Chain of Custody Form
- ☐ pH/ Conductivity / Temperature meter
- ☐ Pencil or Pen
- ☐ Indelible Marker
- ☐ Calculator
- ☐ Disposable Gloves
- ☐ Distilled Water
- ☐ Alconox/liquinox liquid or powdered non-phosphate cleaner
- ☐ Buckets or Tubs for decontamination station
- ☐ Bottom-filling bailer or pumping device for purging
- ☐ Disposable bottom-filling bailer and emptying device for sampling
- ☐ String, twine or fishing line for bailers
- ☐ Sample containers appropriate for intended analytical method (check with lab)
- ☐ Sample labels
- ☐ Site Safety Plan
- ☐ Tools necessary to access wells
- ☐ Drum space on site adequate for sampling event

### **Procedure**

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Measure groundwater levels and check for the presence of free product in accordance with the Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### **Purging**

3. Calculate and record the volume of standing water in each well using the information provided on the Gauging Data / Purge Calculations sheet.  
 $(DTB-DTW) \times \text{Conversion Factor} = \text{Casing Volume}$ .
4. The purge volume shall be at least three times and no more than seven times the volume of standing water (the casing volume).
5. Purge the well by bailing or pumping water from the well into a calibrated receptacle, such as a five gallon bucket or tub with markings to indicate one gallon increments. Collect purgeate in a 55 gallon labeled drum and store on site. Drum labels should include the date, contents, site number, and SounPacific's name and telephone number.
6. Take measurements of pH, conductivity, temperature, and visual observations to verify the stabilization of these parameters. At least five measurements of these parameters should be made throughout the purging process. The parameters shall be considered stabilized if successive measurements vary by less than 0.25 pH units, 10% of conductivity in  $\mu\text{S}$ , and  $1^{\circ}\text{C}$  (or  $1.8^{\circ}\text{F}$ ). Continue purging until at least three times the casing volume has been removed, and the measured parameters have stabilized as indicated above. Do not exceed seven casing volumes.
7. Take a final depth to groundwater measurement and calculate the casing volume of the recharged well. Ideally, the casing volume should have recharged to at least 80% of the original measured casing volume before sampling commences. If due to slow recharge rates it is not feasible to wait for the well to fully recharge, then note this on the Gauging Data / Purge Calculation Sheet and proceed to sample following the procedure below.

## **Sampling**

8. **After completing groundwater measurement, and checking for free product if necessary, in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, and after purging monitoring wells as described above, groundwater samples may be collected.**
9. Slowly lower a clean, previously unused disposable bailer into the well water approximately half of the bailer length, and allow the bailer to slowly fill.
10. Withdraw the full bailer from the monitoring well and utilize the included (clean and unused) bottom-emptying device to fill the necessary sample containers, and seal the container with the included PTFE (Teflon) lined cap.
11. When filling VOAs, fill the VOA completely full, with the meniscus rising above the rim of the bottle. Carefully cap the VOA and invert it and gently tap it to determine whether air bubbles are trapped inside. If the VOA contains air bubbles, refill the VOA and repeat this step.
12. All samples shall be labeled with the Sample ID, the Sample Date, and the Sample Location or Project Number. Use an indelible marker for writing on sample labels.
13. Record all pertinent sample data on the Chain of Custody.
14. Place samples in an ice chest cooled to 4°C with ice or "blue ice". Bottles should be wrapped in bubble wrap, and VOA's should be inserted in a foam VOA holder to protect against breakage. Samples are to be kept at 4°C until delivered to the laboratory. Any transference of sample custody shall be indicated on the Chain of Custody with the appropriate signatures as necessary.
15. Utilize clean, previously unused gloves, bailer and line, and bottom-emptying device for each well sampled.
16. When finished with all sampling, close and secure all monitoring wells.
17. Leave the site cleaner than when you arrived and drive safely.

# **Appendix C**

## GAUGING DATA/PURGE CALCULATIONS

Job Site: BIGFOOT GASJob No.: SP-120Event: 15<sup>th</sup> QUARTERLYDate: 3/8/06

WELL NO.	DIA. (in.)	DTB (ft.)	DTW (ft.)	ST (ft.)	CV (gal.)	PV (gal.)	SPL (ft.)	Bailer Loads	Notes
MW-1	2	11.88	0.83	11.05	1.77	5.31			NO SHARN, NO ODOR
MW-2	2	9.13	2.15	6.98	1.12	3.36			NO SHARN, NO ODOR
MW-3	2	11.67	1.55	10.12	1.62	4.86			NO SHARN, NO ODOR
MW-4	2	12.61	1.59	11.02	1.76	5.28			SHARN, HC ODOR
MW-5	2	11.47	0.59	10.88	1.74	5.22			NO SHARN, HC ODOR
MW-6	2	10.94	1.70	9.24	1.48	4.44			SHARN, NO ODOR

**Explanation:**

DIA. = Well Diameter

DTB = Depth to Bottom

DTW = Depth to Water

ST = Saturated Thickness (DTB-DTW)

CV = Casing Volume (ST x cf)

PV = Purge Volume (standard 3 x CV,  
well development 10 x CV)

SPL = Thickness of Separate Phase Liquid

**Conversion Factors (cf):**

2 in. dia. well cf = 0.16 gal./ft.

4 in. dia. well cf = 0.65 gal./ft.

6 in. dia. well cf = 1.44 gal./ft.

Sampler:

JACK SKEAHAN

## Well Gauging/Sampling Report

Sheet 1 of 6

Date: 3/8/06 Project Name: BIGFOOT GAS Project No: SP-120 Well Number: MW-1

Analyses Tested: TPH<sub>g</sub>, BTXE, 5-OXYS, TPH<sub>d</sub>, TPH<sub>md</sub>

Sample Containers: (3) HCL V.O.A.'S (2) 1-L AMBER BOTTLES

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
10:12	0.82		NO SHARPEN
10:50	0.83		↓
	END		

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ns/cm)	DO (mg/L)	DO (%)	
12:07	0	6.69	54.52	0.154	0.91	8.6	
12:21	1.77	6.75	55.81	0.146	1.29	12.4	
12:28	3.54	6.76	55.41	0.143	1.22	11.6	
12:35	5.31	6.78	55.67	0.137	1.50	14.3	

Field Scientist: JACK SKEAHAN



## Well Gauging/Sampling Report

Sheet 2 of 6

Date: 3/8/06 Project Name: BIGFOOT GAS Project No: SP-120 Well Number: MW-2

Analyses Tested: TPH<sub>g</sub>, BTXE, 5 oxy's, TPH<sub>d</sub>, TPH<sub>md</sub>

Sample Containers: (3) HCL V.O.A.'s, (2) 1-L AMBER BOTTLES

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
10:03	2.26		NO STRAIN, NO ODOOR ↓
10:37	2.15		
	END		

### Field Measurements

Time	Total Vol. Removed(gal)	pH	Temp(F)	Cond./(ms/cm)	DO/(mg/L)	DO/(%)	
11:08	0	6.26	55.41	0.436	0.84	8.0	
11:15	1.12	6.37	55.53	0.421	0.41	3.9	
11:20	2.24	6.40	55.72	0.414	0.33	3.1	
11:24	3.36	6.43	55.69	0.420	0.34	3.2	

Field Scientist: JACK SKEAHAN

## Well Gauging/Sampling Report

Sheet 3 of 6

Date: 3/8/06 Project Name: BIGFOOT GAS Project No: SP-120 Well Number: MW-3

Analyses Tested: TPHg, BTXE, 5-oxyS, TPHd, TPHmo

Sample Containers: (3) HCL V.O.A.S, (2) 1-L AMBER BOTTLES

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
10:08	1.57		NO SHEEN, NO ODOR
10:45	1.55		↓
	END		

### Field Measurements

Time	Total Vol. Removed(gal)	pH	Temp(F)	Cond./(ms/cm)	DO/(mg/L)	DO(%)	
12:47	0	6.37	56.01	0.237	0.23	2.2	
12:56	1.62	6.40	56.03	0.232	0.27	2.6	
1:03	3.24	6.44	56.91	0.236	0.30	2.9	
1:09	4.86	6.54	57.22	0.223	0.39	3.8	

Field Scientist: JACK SKERMAN

## Well Gauging/Sampling Report

Sheet 4 of 6

Date: 3/8/06 Project Name: BIG FOOT GAS Project No: SP-120 Well Number: MW-4

Analyses Tested: TPHg, BTXE, 5 oxyS, TPHd, TPHmo

Sample Containers: (3) HCL V.O.A.S, (2) 1-L AMBER BOTTLES

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
10:00	1.59		SHARP, HC ODOR
10:30	1.59		SHARP, HC ODOR
	END		

### Field Measurements

Time	Total Vol. Removed(gal)	pH	Temp(F)	Cond.(/ms/cm)	DO/(mg/L)	DO(%)	
11:38	0	6.61	57.45	0.272	0.18	1.8	
11:46	1.76	6.65	57.49	0.271	0.22	2.1	
11:51	3.52	6.67	57.48	0.272	0.27	2.6	
11:56	5.28	6.68	57.39	0.269	0.28	2.7	

Field Scientist: JACK SKERHAN



## Well Gauging/Sampling Report

Sheet 5 of 6

Date: 3/8/06 Project Name: BIGFOOT GAS Project No: SP-120 Well Number: MW-5

Analyses Tested: TPHg, BTXE, 5 oxyS, TPHd, TPHmo

Sample Containers: (3) HCL V.O.A.S, (2) 1-L AMBER BOTTLES

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
9:56	0.59		HC odor, No SHIRN
10:27	0.59		HC odor, No SHIRN
	END		

### Field Measurements

Time	Total Vol. Removed(gal)	pH	Temp(F)	Cond./(ms/cm)	DO/(mg/L)	DO(%)	
1:51	0	6.55	51.77	0.151	0.18	1.6	
2:00	1.74	6.55	51.25	0.156	0.16	1.4	
2:07	3.48	6.57	51.42	0.188	0.15	1.3	
2:16	5.22	6.60	51.46	0.197	0.16	1.4	

Field Scientist: JACK SKELHAN

## Well Gauging/Sampling Report

Sheet 6 of 6

Date: 3/8/06 Project Name: BILFROT GAS Project No: SP-120 Well Number: MW-6

Analyses Tested: TPHg, BTXE, 5oxys, TPHd, TPHmo

Sample Containers: (3) HCL V.D.A.'s, (2) 1-L AMBER BOTTLES

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
10:05	1.70		SHOWN, No ODOR
10:40	1.70		No SHOWN, No ODOR
	END		

### Field Measurements

Time	Total Vol. Removed(gal)	pH	Temp(F)	Cond. (ms/cm)	DO (mg/L)	DO (%)	
1:19	0	6.58	55.59	0.170	0.15	1.4	
1:27	1.48	6.57	56.53	0.171	0.23	2.2	
1:31	2.96	6.63	57.25	0.175	0.19	1.8	
1:38	4.44	6.68	57.48	0.170	0.24	2.3	

Field Scientist: JACK SKEATHAN